

AMATEUR RADIO



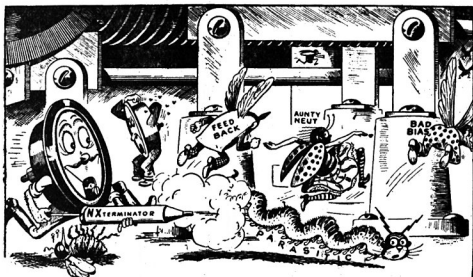
Published in the interests of Amateur Radio
by the W.L.A. (Vic. Div.). Official Organ
of all divisions of the W.L.A., A.R.A.
(N.S.W.) and the R.A.A.F. Wireless Reserve.



PRICE

6^d

NOVEMBER, 1934



ARE THESE YOUR
DIFFICULTIES !!!

Good Instruments are Necessary to Locate them

WESTINGHOUSE
MX and NX
RADIO INSTRUMENTS

will soon be available

Write for details and prices

WESTINGHOUSE
METAL RECTIFIERS
AND WESTECTORS

Write for interesting pamphlet

ALAN S. DUKE Pty. Ltd.

486 Bourke Street, Melbourne, C.1

Telephone: Central 1255 [2 lines]

NEW!

POWERFUL!

CLEAR!

**The Micro-Sensitive
RADIOTRONS**
with 5 great advances!



1. Quicker start.
2. Quieter operation.
3. Uniform volume.
4. Uniform performance.
5. Every valve is matched.

These improvements mean better performance, full complete tone, wider range and longer life for the same cost.

Have your valves tested by your radio dealer and replace worn-out ones with the new Micro-Sensitive Radiotrons—they will give fresh sparkle to your receiver and ensure more pleasing and enjoyable entertainment.

The Radiotron Designer's Handbook now available! A comprehensive book prepared expressly for the set designer and invaluable to wireless engineers, experimenters, service mechanics and salesmen. Price 1/-. Write to-day for your copy.

AMALGAMATED WIRELESS (A'sia.) LTD.,
47 York Street, Sydney.
167-9 Queen Street, Melbourne.

ASSOCIATED GENERAL ELECTRIC INDUSTRIES LTD.,
93-5 Clarence Street, Sydney.
Cnr. Queen and Little Collins Sts., Melbourne, C.I.

RADIOTRONS

ADVERTISEMENT OF AMALGAMATED WIRELESS VALVE COMPANY LIMITED.

The "505"



The latest addition to their 2½ in. Instruments

0.50 Millivolts D.C.

0.5 Volts A.C.

0.1 Milliamps D.C.

0.1 Milliamps A.C.

1000 Ohms per Volt

All in the one Instrument, with Selector Switch.

Stocks Have Arrived

NOYES BROS.

(MELBOURNE) PROPY. LTD.

597-603 Lonsdale Street

Phone Central 10105

AMATEUR RADIO

Published by the Wireless Institute of Aust., Victorian Division.

Vol. 2.—No. 11

1st November, 1934.

INDEX

	Page.		Page.
Editorial	5	Victorian QSL Bureau	24
Directional Antennae for Higher Frequencies	6	A.R.A. of N.S.W. Notes	25
Neutralisation of Power Am- plifiers	11	VK3— Key Section Notes	26
Annual Convention	19	Phone Section Notes	30
Operating and Experimental Section	22	VK6 Notes	31
Federal Headquarter Notes	25	VK7 Notes	32
		R.A.A.F. Notes	34

WIRELESS INSTITUTE OF AUSTRALIA.

OFFICE-BEARERS:

Federal Headquarters: Adelaide

President:

P. BOWMAN (VK5PM)

Secretary:

E. A. BARBIER (VK5MD)

Treasurer:

R. D. ELLIOTT (VK5RD)

Traffic Manager:

M. GRAY (VK5SU)

Publicity Officer:

G. R. RAGLESS (VK5GR)

Victorian Division

Patron:

CAPT A. E. PAYNE (VK3PP)

President:

H. KINNEAR (VK3KN)

Secretary:

J. WINTON (VK3XR)

Treasurer:

L. POWERS (VK3PS)

Traffic Manager:

R. H. CUNNINGHAM (VK3ML)

Magazine Committee:

Editors: H. KINNEAR (VK3KN)

V. MARSHALL (VK3UK), J. MARSLAND (VK3NY),

L. MONCUR (VK3LN), W. R. GRONOW (VK3WG),

R. H. CUNNINGHAM (VK3ML).

All Communications and MSS. should be forwarded to the Editor, "Amateur Radio," Box 2, P.O., South Melbourne.

Subscription to "Amateur Radio" is 5/- per Annum (Post Free), paid in advance.

Should you not receive your Copy of "Amateur Radio," notify your Divisional Secretary at once.

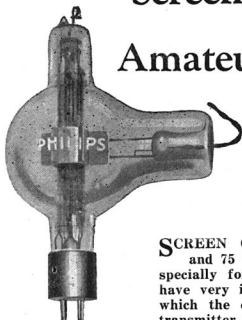
Advertising and Publishing Office: Address Publicity Manager, "Amateur Radio", 126 Whitehorse Rd., Box Hill, E11. Phone: WX 2429

1st November, 1934.

Screen Grid Valves

For

Amateur Transmitters



Types:
QB2/75, QC05/15

quarter of actual size

SCREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

CHARACTERISTICS:

Table A.
Type.

Screen Grid Valves
QC 05/15. QB 2/75

Type.	QC 05/15.	QB 2/75
Filament Voltage	4.0	10.0
Filament current*	1	3.25
Saturation current*	400	2,000
Anode voltage	400-500	2,000
Screen grid voltage	75-125	300-500
Max. anode dissipation	15	75
Anode dissipation on test	20	100
Max. screen grid dissipation	3	15
Amplification factor*	225	200
Mutual conductance (slope)*	1.4	1.4
Int. resistance*	160,000	150,000
Anode-grid capacity001	.02
Max. diam. of bulb	50	100
Max length	160	210

*Approximate values.

PHILIPS

TRANSMITTING VALVES

Editorial

Celebrations! What a world of fun, enjoyment, and pleasure revolves around those 12 letters. With Melbourne gay with bunting and decorations of various descriptions; with Melbourne the Mecca of tourists, both Interstate and overseas, we can say that everyone in the garden city of the South is 100 per cent. "Celebrations conscious." Yet, while the community, as a whole, is feting Melbourne's Centenary; while the festive spirit is abroad, it seems most appropriate that we, the Ham fraternity, should have a celebration of our own that intimately concerns us all. With this issue we celebrate the first birthday of "Amateur Radio." From an embryonic thought in the minds of a few idealists, from the universal demand of the Hams of Australia, our lusty youngster of one year has sprung. Now, after 12 short months, "Amateur Radio" is accepted as an essential part of our Ham lives. Up to the present, the Editors have only had printed technical articles, containing the necessary practical data to bring all stations into line with the trend of Radio advancement. Whilst still continuing with this policy, we intend to offer new theories and new avenues of research, as they open up, with the idea of fostering a more intense experimental sense in us all. We must confess, somewhat shamefacedly, perhaps, that the amount of work we do, individually, along new lines of experiment is very small. Our experimental sense is not developing; it is stagnating, and, inasmuch as the job of the Press is to lead public opinion, surely the job of "Amateur Radio" is to lead and guide our Ham lives.

How many of us have experienced that never-to-be-forgotten thrill of experiment when we "sail an uncharted sea," and, perhaps, bring our experiment to a successful conclusion? Not very many of our newer Hams have ever attempted to follow in the footsteps of the old-timers, and seek knowledge in their hobby by actual experiment. Most are quite content to reproduce the product of

another's energy and work. A tour around the average shacks will bring this fact home very forcibly. The average transmitter is either English or American in layout and design. We have yet to evolve, shall we say, an Australian personality in our shacks. To assist in achieving this ideal is one of the future aims of "Amateur Radio."

We each hold an EXPERIMENTAL Licence, and if each and every one of us remembered this fact, we venture to say that there would never be heard that expression, repeated only too frequently, "Ham Radio has not the same kick as it used to have." We have only ourselves to blame for that statement; we must administer "the kick" ourselves. It wouldn't be much use for us to sit in a car without an engine, expecting to get somewhere. We must have motive power to move, and what an engine is to a car, so experimental work is to the fullest enjoyment of our grand old hobby.

The same "kick" can also be spoken of in reference to "Amateur Radio." This is a job that concerns every Ham in Australia, both individually as well as collectively. Individually, because each must see that he does his part towards supplying notes and articles; collectively, because he must try and increase his State's circulation. If you feel that things are either not what they were, or not what they ought to be, before you raise a cry, ask yourself whether your own apathy is not a contributory cause to the trouble. Remember the whistle doesn't move the train. So get your shoulders to the wheel; your fellow Hams will help you; your W.I.A. and A.R.A. will help you; the P.M.G. Department will help you, and your own magazine, "Amateur Radio," will help you. So how about it?

Country Members' Representatives to Council (Vic. Div.): Mr. Howden (3BQ), Mr. Marsland (3NY). Send your requests along

Directional Antennae for Higher Frequencies

(By courtesy of Westinghouse Electric and Manufacturing Co., through Alan S. Duke Pty. Ltd.)

The possibilities of directional antennae systems have always been a source of dreams to the amateur. But when he views such systems as are employed by the large commercial radio companies, with their acres of required land, his dreams fade, and he reconciles himself to the old single wire which runs out over the back shed through the trees. The 56, 28 and 14 megacycle bands are fields in which the amateur may easily try out some of the simpler schemes and he may expect to obtain results which will repay his time and trouble. He might even find it possible to add a reflector or two to his 7 megacycle antenna.

The directive antennae systems used by the commercial companies are quite extensive—and also expensive. They consist of complicated arrays such as were developed by Chirex, Latour, Conrad, Franklin, Marconi, Alexanderson, Beverage and others. For the most part they consist of systems radiating a vertically polarized wave. They obtain their directive effects through the stacking of half-wave elements, the use of long arrays of the same, and the use of reflecting curtains. Such installations may extend for hundreds of feet and rise to great heights even though the frequency at which they operate be around 14 megacycles.

The amateur is limited to the simpler schemes such as the Double Zepp, the "H" Type, the Parabolic Reflector type, or if he is more ambitious he may construct an antenna employing four elements, with or without a reflector. He can easily add a reflector or two to his present vertical doublet which will improve its field in definite directions. It is possible to construct all these types in a limited space if they are employed on 28 or 56 megacycles. The Double Zepp is mentioned since

it is really a part of the "H" type and in addition has the advantage of being operable at two frequencies with little difficulty.

Before going into the discussion of the types mentioned it is well to consider the fundamentals surrounding an antenna. Except in a few rare occasions, all antennae may be considered as half-wave elements. A half-wave element or doublet, as it is commonly called, if so located as not to be influenced by any surrounding objects, has a definite field, both with reference to its axis and in a plane perpendicular to its axis. In the plane perpendicular to its axis it radiates uniformly in all directions of the compass. In other words, a vertical doublet will radiate uniformly in all directions of the compass. In a plane through its axis, the field is strongest at points at right angles to the axis and weakest off the ends of the axis. In other words, an aeroplane flying one mile above a vertical doublet would receive a weaker signal than when flying one mile on any side of the doublet. When the doublet is brought down near the ground, that portion of the field radiated below the horizontal is partly absorbed and partly reflected by the earth, depending upon the effectiveness of the earth as a reflector. It is customary to consider only that portion of the field radiated above the horizontal. In the case of a grounded quarter-wave antenna this consideration is of course correct.

The introduction of any object near the doublet will cause the impedance of the doublet to be lowered. Such objects absorb part of the energy radiated. But if such an object is capable of reradiating the energy absorbed it will naturally cause a change in the field pattern. Such a change is commonly termed "interference," and the resulting field called

the "interference" pattern. If the interfering object be another doublet, it will absorb and reradiate the energy with little or no loss. Upon these facts are based the systems discussed. The added doublets may be fed directly from the transmitter as in the case of the "H" type and multi-element beam, or operate by absorption and reradiation as in the case of the parabolic type and the screen of the multi-element beam. In practice, the commercial companies feed all the elements of the array through transmission lines and are able to control the phase relation of the instantaneous currents and the values of the same.

It should be pointed out that all objects in the field of an antenna capable of absorbing energy affect the interference pattern. This accounts for many cases of marked directional effects of antennae when consideration of the antenna itself gives no indication of such effect. Interfering objects of this type can upset the best laid plans for directive antennae. Be sure to take all possible objects into consideration when laying out "signal quarters."

The Double Zepp Antenna.

The Double Zepp antenna may be used for two frequencies, one of which must be twice the other. It will be noted that the current distribution of this antenna when used on the lower designed frequency, is identical with that of the common doublet. Fig. 1 shows the current distribution in such an antenna designed for 20 and 10 metre work and being operated on 20 metres. The quarter wave transmission line acts as an impedance matching transformer when the input impedance equals the load of antenna impedance.

Fig. 2 shows the current distribution for the antenna when being operated at the higher frequency. The antenna now has assumed a simple form of the "stacked" type of array. This will cause the energy radiated to concentrate in a narrower beam at right angles to the axis of the antenna. There will be a current node at the transmitter for both frequencies.

Example: 21 and 10.5 Metres.

$$L = \frac{\text{Lower Wave length}}{2.1}$$

$$L = \frac{21}{2.1} = 10 \text{ metres} = 32.8 \text{ feet.}$$

If such an antenna is erected vertically and operated at its higher frequency it will have a gain between 2. and 3. d.b. over a straight doublet operating at the same frequency.

The formula given is of course empirical, but is the same used in calculating doublet dimensions. It is obvious that this antenna operates differently than the conventional Zepp operated at a harmonic

The "H" Type Antenna.

This type of antenna has found much use by the British in high frequency directional receiving equipment. Here is an antenna system that possesses marked characteristics. It may be considered as two Double Zepps spaced $\frac{1}{2}$ -wave apart. If such a system were designed for 21 metres but operated at 10.5 metres, it then consists of two double Zepps spaced one wave apart. The elements operate in phase since they are fed directly. When operating at 21 metres the system is bi-directional, the beams being at right angles to the line of array. When operated at 10.5 metres, it is directional in four ways, but the beam passing through the line of the array is spread out over a wider angle and not as strong as the beam at right angles to the line of array. Fig. 3 shows the general plan of such an antenna. Fig. 4 shows a polar plot of the field surrounding such an antenna when designed and operated at its lower frequency. Fig. 5 shows the polar plot of such an antenna when operating at twice its designed frequency.

In this antenna system use is made of the fact that a standing wave has a pure resistance component at both its maxima and minima. By constructing the sections of the feed lines that connect the radiating elements to the main feed line from the transmitter, each $\frac{1}{2}$ -wave long, they may be made to function similarly to a transformer and be used to match the load impedance of the antenna to the main transmission line impedance.

Determination of the characteristics and dimensions of the connecting $\frac{1}{4}$ -wave lines and the main feed line are the main considerations of such an array. The lengths of the radiators are determined by the same formula as used in the Double

Lower Wave Length.

Zepp. L =

2.1

It is assumed that in either case it is desired to feed the centre of the line connecting the radiators with a 600-ohm line. This is the point indicated as "b" in Fig. 3. This means that the impedance of each $\frac{1}{4}$ -wave line at the point "b" should be 1,200 ohms. When the two lines are joined, to be connected to the main feed line, they will offer an impedance of 600 ohms, to the feed line as results from the paralleling of two impedances. However, the antenna connected to the other end of each quarter-wave line will have a resistance somewhere between 60 and 90 ohms. 70 ohms seems to be an average resistance for antennae of this type when operating between 14 and 28 megacycles. By so constructing each $\frac{1}{4}$ -wave line so that it has a certain characteristic impedance, a perfect match can be made of the 600-ohm line to each antenna. Determination of this characteristic impedance and the dimensions of the line are as follows:—

Let Z_q equal impedance of quarter-wave line

Z_f equal impedance of feed line

Z_l equal load impedance of antenna, therefore Z_q equals the square root of $Z_l Z_f$ or for values given above

Z_q equals the square root of 70 times 600

equals 205 ohms.

Since a transmission line constructed to have the above characteristic impedance will be rather closely spaced, it is usually best to consider the materials at hand and calculate the spacing. This is done by using the well-known formula

$$Z_0 \text{ equals } 276 \log_{10} \frac{2D}{d}$$

where D is the spacing and d is the diameter of the wire.

$\frac{1}{4}$ -inch tubing spaced 2 inches apart would be satisfactory, or No. 18 wire spaced about $\frac{1}{4}$ inch would be satis-

factory. The latter calculation indicates that a pair of twisted and insulated wires, such as lamp cord or telephone twist, might prove satisfactory. It is recommended that a small conductor, about No. 14, be used, and spaced on small insulators.

When this system is used at the higher frequency, the determination of the connecting $\frac{1}{4}$ -wave lines is of no importance, since the load impedance of the antenna is then reflected at the centre and the impedance at point "b" becomes say 70 ohms for each line. The effective impedance presented to the feed line is now 35 ohms, and construction of such a line is impracticable unless one goes to a line using 4, 6, 8 or even 16 wires. There is an easy solution at hand. Since the impedance matching transformer effect of a line is not limited to $\frac{1}{4}$ waves but may be applied to any line that is an odd number of quarter waves long, the amateur has but to place the antenna-system at such distance that the 600-ohm feed line is some odd multiple of a quarter wave at the higher frequency used. This can be done more readily if such a system is used on 20-10 metres or 10-5 metres. The impedance at the sending end of the 600-ohm line can be adjusted on the tank coil of the transmitter. If the above conditions existed, the input of the 600-ohm line when used as an impedance matching transformer, would be $600 = \sqrt{35 Z_f}$ or $Z_f = 103$ ohms. This should present little difficulty in matching since the amateur probably will change coils when using the higher frequency.

Closely spaced $\frac{1}{4}$ -wave lines may be avoided by constructing the feed line so as to have a higher impedance, say about 1,000 or 1,200 ohms. This will also improve the coupling at the transmitter when the antenna is used on the higher frequency.

Effects of Adding Reflectors. Parabolic Beam Antenna.

The "H" type antenna is an example of several elements being positively excited. However, should a doublet be placed near an existing vertical doublet, it will absorb energy and reradiate the same, the phase relation of the currents in the two elements being dependant upon the spacing of the elements. Two

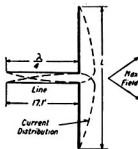


Fig. 1

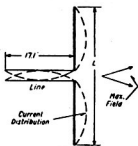


Fig. 2

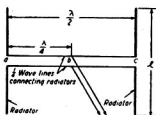


Fig. 3

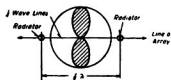


Fig. 4

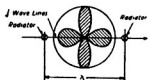


Fig. 5

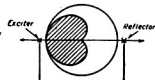


Fig. 6

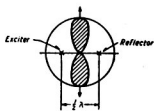


Fig. 7

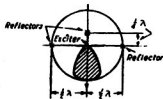


Fig. 8

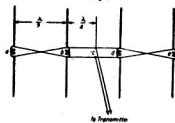


Fig. 9

doublets separated $\frac{1}{2}$ -wave with a phase difference of 90 deg. have the peculiarity of radiating strongly in one direction along the axis of the array, with zero amplitude in the opposite direction. Two doublets spaced $\frac{1}{2}$ -wave apart with a phase difference of 0 deg., radiate strongest in both directions perpendicular to the axis of the array. It is apparent that if a reflector doublet were added $\frac{1}{2}$ -wave behind an existing antenna, and two more erected each $\frac{1}{2}$ -wave to either side of the existing antenna, the array would assume the shape of a parabola with the existing antenna at the focal point. The results obtained from such a Parabolic Beam Antenna will often cause a signal increase of 5 to 7 d.b. in direction of the transmitted beam. Figs. 6, 7 and 8 show the development of such a system. In erecting a parabolic system, the exciter doublet is brought into proper adjustment first, then usually the rear reflector second, and then the side reflectors one at a time. The exciter may then be retuned. As each reflector is added, there will be an increase in the currents of the antenna and existing reflectors. This is due to the lowering

of the resistance or load impedance of the antenna. The amateur may improve his signals by adding a single reflector spaced $\frac{1}{2}$ -wave to the rear of the antenna in the desired direction, or $\frac{1}{2}$ -wave to the side of the antenna at right angles to the desired direction. The average back yard will allow erection of a reflector. Tuning the rain spout may improve your signals.

Four Element Beam. With or Without Reflectors.

The "H" type antenna may be further developed by the addition of a driven element $\frac{1}{2}$ -wave to either side of the existing elements. It then takes the form of an array consisting of four $\frac{1}{2}$ -wave elements spaced $\frac{1}{2}$ -wave apart in a plane at right angles to the desired direction. It is recommended that the elements each be coupled to the connecting feed lines with coil terminations. Fig 9 shows such an array. In order to keep the phase relations of the outside antennae the same as the inner antennae, it is necessary to reverse the connections of the connecting $\frac{1}{2}$ -wave lines. It is possible to keep adding elements at $\frac{1}{2}$ -wave intervals.

This has the effect of narrowing the beam in the desired directions. Antennae containing as high as 16 elements have been constructed.

The calculation of the required transmission lines may appear difficult, but upon inspection it proves quite simple. It is possible to construct the $\frac{1}{2}$ -wave, $\frac{1}{4}$ -wave, and the main feed line to the transmitter so that each has the same characteristic impedance. The coil termination at an outer antenna designated as "a" is reflected to the inner antenna coil termination at "b." To the connecting $\frac{1}{2}$ -wave line these impedances parallel and present half this impedance. This holds true for the other half of the antenna, that is at points "d" and "e." Since these impedances when transformed by the $\frac{1}{4}$ -wave line should be twice the main feed line impedance, it is found that if all the lines are constructed to have the same characteristic impedance, the system is perfectly matched. The reasoning is as follows:—

Let Z_a be antenna termination impedance

Let Z_f be the main feed line impedance.

Let Z_o be the $\frac{1}{4}$ -wave line impedance, then at point "b" and point "d" the

$$\text{impedances will be } \frac{Z_a}{2}$$

Therefore

$$Z_o = \sqrt{Z_a Z_f}$$

if Z_a is equal to Z_f then

$$Z_o = \sqrt{Z Z_f} = Z_f$$

All the lines may be of 600-ohm impedance.

Such an array will have a gain of about 6.5 d.b. If reflectors are erected $\frac{1}{2}$ -wave behind each antenna, the array is unidirectional and will have a gain about 10 d.b.

If this array is used at twice the designed frequency, the outer antenna impedances are again reflected to the inner terminations since the $\frac{1}{2}$ -wave lines are now full wave lines. The impedance halves and is now reflected by the $\frac{1}{4}$ -wave lines which function as $\frac{1}{2}$ -wave lines, and the impedance presented to the main feed line is $\frac{1}{4}$ of the antenna terminating impedance. By constructing the main feed line to be an odd multiple of

$\frac{1}{2}$ -wave long, at the higher frequency, the existing feed line will still serve. The impedance this line presents at the transmitter tank coil is four times the antenna terminating impedance. This should not present much difficulty.

All the elements in the four-element antenna can be constructed by the methods given in the previous article, Two-Wire Untuned Transmission Lines.

WHERE IS 28 AND 56 M.C.?

There seems to be an impression among some hams that these bands are hard to find unless one has a wave meter, but if knowing where 14 M.C. is, there is really no more trouble finding 28 M.C. than there is in finding 14 M.C. from 7 M.C.

As almost everyone has a 14 M.C. oscillator, it is quite easy to "cut and try" the receiver coils until the second harmonic is found, which will appear on 28 M.C.

If a transmitter has been constructed, put up a wire 16 feet 6 inches long, and in the centre insert a small two-turn coupling coil, with a midget condenser on one side and a pea lamp on the other. Now tune the transmitter to put power into this, and with the 14 M.C. coil in the receiver an overtone will be found fairly close to or in that band. Finally adjust the transmitter till this overtone is between 14,000 and 15,000 K.C.

The same procedure can be used for 56 M.C., the length of the "antenna" being 8 feet 3 inches.

Another method is to use the Letcher wire system, in which two parallel wires, about 40 feet long and three inches apart, are required, a loop at one end being coupled to the oscillator. A plate milliammeter is needed to show resonance, which will occur at points a full wave apart when a short circuiting strip is slid along the wires.

By measuring these points the wave-length of the oscillator can be found (which will be between 16 and 17 feet) for the 56 M.C. band.

Incidentally, there are a couple of G.R. 56 M.C. wavemeters in the Vic. Division instrument library getting rusty for want of use!

The Neutralisation of Power Amplifiers

By Robert A. Anderson—VK3WY.

During the last few years COPA and self-excited MOPA rigs have become increasingly popular as their many advantages have been recognised. There is seldom any difficulty found in getting the oscillator to perk, but occasionally difficulties spring up after the power amplifier stage has been hooked on. A lot more goes to the successful operation of neutralised power amplifiers than is usually realised by a large percentage of budding hams—until they have tried them, anyway.

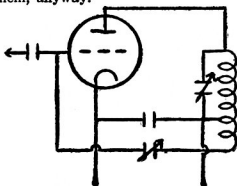


Fig. 2

One of the main snags is the neutralisation of the tube. It is often a hidden snag, as a common procedure of neutralisation which is not easily apparent, but which is detrimental to the efficiency of the tube and ruinous to the note. This effect on the note is particularly noticeable when a self-excited master oscillator is used.

Neutralisation of a power amplifier is necessary because the interelectrode capacity of the tube will feed back energy from the plate to the grid circuit, and, when both plate and grid circuits are tuned to the same frequency, will cause the tube to oscillate in the manner of a TPTG oscillator. In the case of a tube acting as a frequency multiplier, the grid and plate circuits are tuned to different frequencies, and so the tendency to oscillate disappears. In the case of a screened grid tube, of course, there is insufficient interelectrode capacity for

the tube to oscillate and consequently there is no necessity for neutralisation.

Although, as stated above, neutralisation is unnecessary with frequency multipliers, it has been found that with judicious use of the neutralising condenser, greater output can be obtained from the tube. The capacity of the condenser should be adjusted so that the tube is just outside the point at which it will commence to oscillate. This adds regeneration at the harmonic frequency and considerably bumps the output of the tube.

All methods of neutralisation depend on impressing on the grid a potential equal to, and 180 degrees out of phase with the voltage fed back through the interelectrode capacity of the tube. The methods which have been in most general use during the last few years for obtaining this voltage are shown in figs. 2 and 3. These have been dealt with very fully in the past and so nothing further about them now.

In fig. 4 is shown one of the latest and, at the same time perhaps, the most efficient form of neutralisation. Instead of tapping the tank coil, as in the previous circuits, the tank condenser is tapped. A split stator type

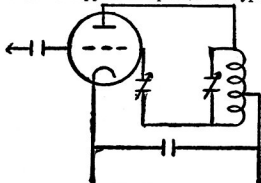


Fig. 3

condenser is used to make this feasible. As a constant voltage ratio is obtained between the two sections of the tank circuit, regardless of the coil used, the one setting of the neutralis-

ing condenser will be correct for all bands. Although this type of neutralisation was primarily evolved to obviate the necessity for reneutralisation on each band, it has been found to improve the general efficiency of the power amplifier to a large extent. This may be attributed to (a) the input capacity to the tube is diminished, and (b) it has a tendency to cut out the second harmonic. Actual results have shown an increase in antenna current of from 10 to 20 per cent., the input being kept constant. When using link coupling between the power amplifier and the exciting stage, it is possible to use larger grid coils because of the lower input capacity, and thus provide a higher exciting voltage to the grid of the amplifier. It will be found that neutralising condensers will need to be smaller than usual when using this method. This may cause some difficulty when using tubes with a low interelectrode capacity, e.g., types '47, 85, 800, etc., but the method will be found to be admirable for tubes with higher internal capacities.

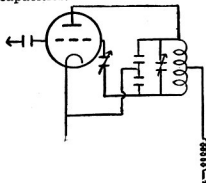


Fig. 4

For low or medium power amplifiers receiving type condensers will be satisfactory, as the breakdown voltage is doubled owing to the two sections of the condenser being in series. For higher power amplifiers, however, transmitting type split-stator condensers are necessary and these are often not easily obtainable. The same effect may be obtained, however, by placing two condensers in series with each other across the main tank condenser, and taking the tapping from the midpoint of the two series condensers, as in fig. 5. These condensers should preferably, be air-dielectric, and their capacity in series should approximately equal the capacity of the main condenser. Mica dielectric condensers

of the required voltage rating have been tried in this position. Although they appeared to work all right with fairly low power, it is usually preferable to keep mica condensers out of the tank circuit and so the air dielectric type are recommended unless QRP is used.

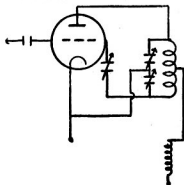


Fig. 5

The process of neutralisation using a two-turn coil and a flash lamp is familiar to all, but it should not be forgotten that this method, at best, only gives an approximate neutralisation. After this process has been carried out, a milliammeter should be connected in the bias lead and the grid current observed while tuning the tank condenser through resonance. The neutralising condenser should then be adjusted (and it usually needs very fine adjustment) until there is no flicker in grid current, or until the flicker is at a minimum when the tank condenser passes through the resonance point. Neutralisation should then be complete and only then is the time for the plate voltage to be first applied.

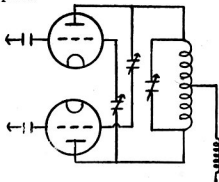


Fig. 6

So far, attention has only been given to single-ended amplifiers. One of the advantages of push pull is the comparative ease with which an amplifier may be neutralised. Two neutralising condensers are used as in fig. 6.

The neutralising procedure is the same as for single-ended amplifiers, except that the two neutralising condensers should be adjusted simultaneously. Once the correct setting for the neutralising condensers has been obtained, they may be left set for all bands. The circuit of fig. 4 may be adapted to push pull amplifiers, but results here have not shown any apparent advantage. This is probably due to the fact that the push pull amplifier has already the advantage of low input capacity and its ability to cut out the second harmonic is well known.

THE DOUBLET ANTENNA—SOME COMPARISONS.

By VK2NO.

The writer adopted this type of twisted feeder doublet some time ago, with the net result that nothing else would be even considered at VK2NO. Whilst admitting that more than one antenna is rather a nuisance, and that not everybody can afford the space, the trouble of using one for each band is amply compensated for in the results obtained. I have recently moved to a new QRA and tested this doublet on 7 M.C. against a well-erected "Zepp" under good DX condition, with an eye on Europe, in the early morning. There is no comparison. With the doublet, sloped slightly in a north-north-west direction, when I hear G's, I work them. The "Zepp" shows heavy losses in European results, even though sloped in the same direction. Using this doublet this morning, I managed to break the ice for ex VK2NR with VK. Jack was visiting G2ZQ, and we had a good chat. He remarked that he was indeed surprised to hook up with VK2NO for his first G-VK contact, knowing that VK2NO had a putrid DX QRA; whereupon I explained that I had moved to a spot where I can almost see Frisco from the shack window, and this, with the efficient radiator, was responsible.

A word of advice about these twisted untuned feeder doublets. It is not good enough to wind a turn or two of insulated wire over the tank and hope for the best. The coil must be adjusted somewhere carefully around the nodal point, otherwise the final stage will draw heavy current

without doing much good. My method is to make a coil of two turns of three sixteenths copper tube, supported equally around the tank coil, and the two turns well spaced. One turn and a half is sufficient for ample coupling with the coil almost at the cold end of the tank. If the coil is made with wooden spacers boiled in paraffin wax and with these spacers arranged with an inside diameter just larger than the tank, the coil can be moved sideways for ready coupling adjustment. Clips on the feeders enable the tapping of the coil where desired.

As an indication of the difference in indicated radiation. With a "Zepp" with 48 feet feeders, series tuned, indicated feeder current was .8 ampere. With the twisted untuned feeder doublet, the indicated current is 1½ R.F. amperes with the same input and lower plate current drawn by the P.A. tube. Of course the doublet must be cut carefully for the frequency of the particular crystal used, but is flexible over about 80 K.C. at 7 M.C. Another point, holding an R.F. wavemeter near the feeders with 1½ amperes therein, there is absolutely no sign of feeder radiation. They cancel perfectly. Twisted lamp cord is not good enough and with exposure to the weather, the efficiency will rapidly fall off. The thing to use is 14 V.I.R. lighting cable, twisted up. This will stand the elements for many years. In case, and I suppose this is so, many of the gang didn't see the table I published elsewhere last year (not the writer's work, credit goes to W6AJF in "Radio," U.S.A.), I am enclosing a diagram of the system and a frequency/aerial length chart which should be of use to every ham on the air. It should be noted that the length between end and end of the flat-top includes the one foot insulator length at the centre. As for reception, even with one feeder connected to the aerial terminal of the RX, and the other to the chassis, the results are far in advance of any usual aerial. Signal strength definitely goes up, electrical interference goes down, and selectivity goes up into the bargain.

Referring to the frequency-aerial length chart. For 28 M.C., cut the 14 M.C. figures in half, retain the 1 foot Y piece in the centre of the doublet, and away you go. The arrangement for the Y piece for these doublets is easily made by using a T

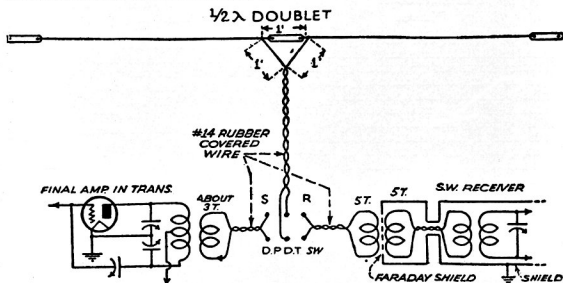
Amateur Radio

shaped wooden frame with insulators at the extremities of the T, and the feeder junction fastened to a small bobbin insulator at the bottom of the vertical.

Now boys, pull down those "Zepps." They are more inefficient than most realise.

**SUPPORT
YOUR
ADVERTISERS**

Frequency in kc.	Ant.: length in feet.
1,715	273
1,800	260
1,900	247
2,000	234
3,500	134
3,600	130
3,700	126
3,800	123
3,900	120
4,000	117
7,000	67
7,100	66
7,200	65
7,300	64
14,000	33½
14,200	33
14,400	32½



Radio Trade Personalities

MR. R. SHARPE.

An interesting visitor to Melbourne during the month was Mr. H. R. Sharpe, sales manager in Sydney of the Amalgamated Wireless Valve Co. Ltd. He occupied the Melbourne chair of Mr. Howarth, away on sick leave, but since happily recovered. Mr. Sharpe described to our representative something of the Company's fine factory at Ashfield, for the manufacture of radiotrons. It has 100 feet frontage, laid out on modern principles, and equipped with the last word in plant. The weekly output is 7,000 radiotrons of different types, comprising 57's, 58's, 2A5's, 80's, 66's, 6D6's, and 42's. Mr. Sharpe stated that it is his Com-

pany's intention to increase the range of types. Over 100 hands are employed under ideal modern conditions, a specialty being the provision of the best radio selections during working hours for their delectation.

THE SMOKE NIGHT.

On Saturday, the 3rd November, a most successful Smoke Night was held at the Institute Rooms, at which the catering was under the control of Bob Dalton. About 40 members were present. Everybody enjoyed themselves, being entertained by items of interest from G. Thompson, R. Beuring, M. Gray, V. Kinnar, and several others. We hope to repeat this type of entertainment at an early date.

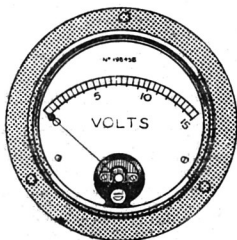
Solving Your Instrument Problems

Amateurs are invited to submit
to us their problems. Stocks are
available to meet all requirements.

SIEMENS-ELLIOTT

BRITISH Radio Instruments

ASSURE
ACCURACY
RELIABILITY
SERVICE



Stocks of Miniature Instruments for Panel Mounting available in the following types for A.C., D.C. and R.F. Measurements. Moving Coil, Moving Iron, Thermo-Couple and Metal Rectifier Patterns.

SIEMENS [AUST.] PTY. LIMITED

SYDNEY—MELBOURNE—BRISBANE—ADELAIDE

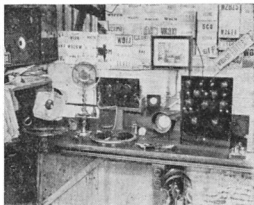
H. C. Little & Co. Ltd., PERTH.

F. H. Fearon, NEWCASTLE

Sole Agents in Australia for the English Electric Co. Ltd., London

Description of Station VK3ZX

VK3ZX is owned and operated by O. G. Oppenheim, 33 Saturn Street, Caulfield, S.E.8, Victoria. The transmitter is crystal-controlled and works on 80, 40, 20, and 10-metre bands, on either CW or 'phone.



The tubes used in the transmitter are 210 crystal oscillator, running with 400 volts on the plate. This is followed by another 210 frequency doubler, operating with 600 volts on the plate, and driving the final amplifier, which is a Radiotron UV211.

This tube, when used as a Class C amplifier for CW operation, runs with 1,000 volts on the plate, and, for telephony operation, 600 volts.

The power supply is contained in the bottom section of the transmitter, and consists of 1,000 volts to supply the final stage, and an 800-volt supply for crystal and doubler stages. A separate 280 is used for bias supplies to the various stages.

On the table to the left of the transmitter the modulator equipment is located, and consists of a UV211 tube, wired in the 100 per cent. Heising system. From the photo it can be seen that meters are used in every circuit for indicating purposes.

On the table beside the modulator is an 11-tube Hammilund Comet type superhet. receiver, finishing up with a pair of 245's in push pull. This receiver is of all-wave design, using plug-in coils, and works satisfactorily down to 5 metres. It is fitted with special band spreading system, which gives ample coverage for all amateur bands.

Next to the receiver can be seen a cathode ray oscillograph, which is used for all kinds of measurements at this station, including tests on modulation.

Photo shows the actual operating position and auxiliary apparatus for telephony work. Twin turntables are used for speedier record changing, and the pickups are standard Senior B.T.H. type. The microphone in use is Piezo Astatic crystal model; behind the microphone can be seen the speech amplifier panel. This amplifier consists of 3 x 6C6's wired as triodes in a special decoupled-resistance-coupled circuit. Alongside the speech amplifier is the volume level indicator.

Auxiliary apparatus at 3ZX comprises calibrated peaked vacuum tube volt meter, for amplifier and radio frequency measurements; also several high voltage meters, and a complete 5 and 10 metre crystal-controlled meter.

The monitor for 'phone work consists of a standard rectifier type monitor, using 1V indirectly heated rectifier as detector, feeding into push pull 45's.

More than 70 countries in all continents have been worked on CW, and 10 countries in five continents on 'phone.

The antenna systems are supported from a 60 ft. mast, and for 40-metre operation half wave zepp is used, and likewise for 20 and 10-metre use.

QUARTZ CRYSTALS

Every Crystal tested to 50 watts input to Penthode Crystal Oscillator
Accurate grinding to .03 per cent. 3.5 M.C., 20/-; 7 M.C., 30/-
100 K.C. Xtals. 465 K.C. Xtal "Gates. Prices on application

PROMPT DELIVERIES

MAXWELL HOWDEN (VK3BQ) CONS. RADIO ENGR.

13 Balwyn Road, Canterbury, E.7.

Centenary Convention, 1934 Victorian Division

VISIT TO THE P.M.G.'S RE- SEARCH LABORATORY.

On Monday, 29th October, an opportunity was given the Wireless Institute of Australia (Vic. Div.) to visit the P.M.G.'s Research Laboratory in Melbourne, through the courtesy of Mr. S. Witt and staff.

A large attendance of members and Interstate visitors were able to see the comprehensive collection of apparatus now used by this progressive branch of the postal service.

Commencing with a description of the aims of the section and the works in progress by Mr. Witt, the party, under the direction of Mr. Witt and Mr. Wright, spent the evening viewing the most up-to-date array of radio apparatus in the Commonwealth, the operation of which was so effectively demonstrated and explained by the various members of the staff.

In short, everybody enjoyed themselves, and no doubt envied Mr. Witt his wonderful array of gear.

Our thanks are extended to Mr. Witt, Mr. Wright, and those members of the staff who so kindly entertained us on an occasion not likely to be forgotten.

W.I.A. (VIC. DIV.) GENERAL MEETING.

A large attendance on Tuesday, 30th October, at the club rooms, comprising 90 members and visitors, had the pleasure of participating in the best general meeting held in Victoria for some time. The President, Mr. H. Kinnear (VK3KN), was chairman, and in his opening speech the visitors from Interstate and country received a hearty welcome. Many interesting subjects were mentioned by various speakers, and discussion followed. A description of the operation and preparation of our magazine, "Amateur Radio," was given by Bill Gronow (VK3wg), who particularly stressed our duties to the magazine's advertisers. The aims and opportunities of VK3WI, the Victorian Section's official transmitter, was clearly ex-

RADIO METERS

Sacrificed ! !

After Stock-taking **CLEARANCE**

If we could tell you the name of the makers, or even the type numbers of these meters, you would be amazed at the prices we are prepared to quote. All that we can say is that the meters offered are world famous for accuracy and reliable—every one a bargain, so—visit Veall's 243 Swanston Street Store—you'll be amazed. Act quickly. Only a limited stock available.

Piezo-Astatic

Pick-Ups & Microphones

8-inch Pickups . . .	£4 10 0
12-inch Pickups . . .	£5 5 0
D104 Microphone . . .	£7 15 0

R.C.A. 46 Valves

Ideal for Crystal
Oscillators, etc.
Limited supply only.

5/11

"Ebro"

3 way voltage Switches

Neat, Round Ebonite
Voltage Plugs, complete with mounting strip and pins. Gives 200V, 230V, and 250 V. Usually 3/6.

2/7

Push Buttons and Keys

For Set Analysers, Testers, etc.
2 Key . . 2/- 6 Key . . 4/-
3 Key . . 2/6 9 Key . . 6/-
Complete with Push Button.

VEALLS

243-249 Swanston St., Melbourne
168 Swanston St., Melbourne
299-301 Chapel St., Prahran
3-5 Riversdale Rd., Camberwell
Cent. 3058 (6 lines), 10524,
Wind. 1605, W 5160.

plained by George Thompson (VK3TH). Whilst Bob Cunningham (VK3ML) told us what the frequency measurement service was going to do for all VK stations. This service will shortly be inaugurated under his control.

A small committee was formed to get under way a Country Convention, at which all councillors will attend, in one of the main country centres. It was thought desirable to do this in order to give the country members the chance to discuss problems affecting them at a general meeting at which the council would preside.

Bill Gronow (3wg) had the pleasure of proposing the grant of a life membership to George Thompson (3TH) for the many services rendered by him to the division during his term of office as President.

The motion was ably seconded by Vaughan Marshall (3UK) and carried unanimously by all present.

Ordinary section business, such as 'phone allocation and QSL distribution, was transacted, and the members present voted it a most enjoyable night.

THE CONVENTION DINNER.

FINE NOTE OF ENTHUSIASM SOUNDED.

CO-OPERATION WITH DEPARTMENT STRENGTHENED.

A fine note of fraternal enthusiasm was the text of the annual dinner held at the Mariposa Cafe, Melbourne, on Wednesday evening, 31st October. Sixty hams and visitors sat down to well-provided tables, over which the President of the Victorian Division, Mr. H. Kinnear (VK3KU), held judicial sway for the occasion.

The Chairman, in his welcoming address, extended the thanks of the division to Messrs. Malone and Martin, of the P.M.G.'s department, for their valuable assistance during the year. He said that they were not like irate fathers, ready to pounce on the amateurs if they did wrong. Rather the amateur who did so found it better to go at once to these officials, when the matter would be peaceably adjusted. At the same time if a man deliberately looked for

trouble, then he need expect no mercy from the department. Therefore he could only say that if they did wrong, then they could take what was coming to them. He signalled the sympathy of the department as the backbone of their own organisation. (Hear, hear.) After putting forward a special claim for further appreciation of their magazine, "Amateur Radio," the Chairman extended a hearty welcome on behalf of the division to its members, to advertisers and other visitors, and particularly to the three officials present from the department—Messrs. S. Witt, W. Conry, and P. Dunne.

He concluded by proposing the health of these gentlemen.

The toast was supported by Mr. Thompson (VK3TH), ex-president of the division. He agreed with the proposer that if amateurs did things they shouldn't do with their eyes open, then they deserved to be "kicked in the pants." But if they closed their eyes when they did them, then they ought to be able to prove an alibi. (Laughter.) If there were anything that the department could do for them which it was not doing, then he for one would be glad to know what it was. (Hear, hear.) The toast was enthusiastically honored.

Mr. Witt, on rising, was received with acclamation. During the years of his service, he said, he had heard the department called many things. (Laughter.) The Chairman had suggested that the department might be looked upon as an indulgent father. Well, all he had to say on that score was, that while the department did not produce any progeny, it was always able to produce plenty of regulations. (Laughter.)

The speaker eulogised the enthusiasm which marked the radio amateur. The amateur did not look for any pecuniary interest, but worked for the sheer love of his endeavour. The human being did his best work in the amateur field, and produced his most brilliant achievements. Referring to the recent contest, the speaker claimed that here were to be seen men of different nationalities, different tastes, different outlooks, united together in a common aim in a way not paralleled in any other field of activity. (Applause.)

Amateur Radio

Speaking as they did to one another from country to country across great distances around the world, the owners of the amateur shacks, though unable to travel, were able to cultivate deep and lasting friendships. (Applause.) He thanked the proposer and seconder of the toast, and again stressed the goodwill of this department. (Cheers.)

Mr. Conry also responded, particularly on behalf of the wireless branch. At the outset he highly commended "Amateur Radio" as a publication. He had not missed a single issue. (Hear, hear.) Nevertheless it was capable of still further improvement, and he understood that its promoters had the matter in hand. (Hear, hear.) He reminded those present that he was secretary of the institute in 1920, during a time of re-organisation after the war. At that time they moved from Little Collins Street out to Prahran, where on the third floor they lived among the pigeons. (Laughter.) There was always plenty of hard work. In those days Max Howden was in short pants. (Laughter.) All the same, he accomplished his feat of establishing communication with the United States of America. (Hear, hear.)

Mr. P. Dunne also spoke. It was, he said, his particular job to look at the gear. Usually things were all right—when he arrived. (Laughter.) Mr. Thompson deserved thanks for pouring oil on the troubled waters more than once. He was afraid that there was nothing at present to indicate any trouble between the Postmaster-General and the "hams." (Laughter.)

Mr. W. R. Gronow (VK3WG) proposed the toast of the Air Force Wireless Reserve. He regretted that he was not a member. (A Voice—They won't take everybody.) He claimed it to be one of the finest bodies the institute had been connected with. It had proved a valuable means of cementing friendships, particularly among the country members. (Hear, hear.) If a man succeeded as an operator with the R.A.F., then he was "on his toes." He referred with appreciation to Flight-Lieut. Wiggins, who unfortunately was unable to be present. He claimed that the standard set up by the Air Force was a very

high one, and also that Victoria had done remarkably well.

Referring to "Amateur Radio," the speaker reminded the meeting that it belonged to the Institute. The R.A.F. notes each month were always keenly appreciated. (Hear, hear.)

The toast was enthusiastically honored, and received a welcome response from Pilot Officer R. Cunningham, who reciprocated to the full the allusions made to the fine co-operative feeling which existed.

Pilot-Officer V. Marshall (VK3UK) claimed that the reserve offered unique possibilities, and members of the Institute were deeply appreciative of the comradeship and esprit de corps. These existed practically in their entirety over the air, and both metropolitan and country stations benefited. Decidedly the Institute had good friends in the P.M.G.'s department and the R. A. A. F. of which they were all proud. (Applause.)

Mr. S. W. Gadsden, in a happy speech, proposed the toast of "Our Visitors." He stressed again the valuable band of friendship set up by radio. Regulator No. Z7B, say, saved them from going altogether mad. (Laughter.) He claimed that wireless had played a big part in saving the Dutch plane during the recent air race.

The toast was drunk with musical honors.

Responses were made by Mr. Kernich, Wireless Operator from the U.S.S. "Augusta," who, amid laughter, expressed regret that their stay was only for a month instead of a year. Mr. Malcolm Gray, South Australia, who raised a laugh by asserting that Federal Headquarters wanted payment of the per capita fees; Mr. W. Barber, Port Pirie, who paid a warm tribute to Mr. Malone, and stressed the unsuitability of the Federal Executive being in Adelaide; Mr. H. Morehouse, Tasmania, whose statement that every member of VK7 was also a member of the W.I.A., was received with applause, and by Mr. Rudolph Beur-ing, who said that though he was there as a visitor, he hoped next year to be a member of the Victorian Division.

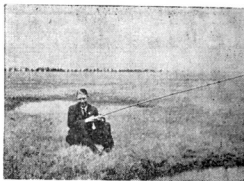
The toast of "The Advertisers" was proposed by Mr. V. Marshall. When the publication of "Amateur Radio" was first mooted, it was realised at the outset that the support of the manufacturing and supply houses was an urgent necessity. They had none of the circulation figures and statistics dear to the heart of the advertising man. They hadn't even a draft of their proposed magazine. They had a thought only. Nevertheless the magazine met with instant success, and supporters came from all corners of Australia, and from outside. They should now feel it obligatory on themselves to support to the fullest extent those firms which were supporting them as advertisers. (Hear, hear.) Many thousands of pounds were spent by amateurs, so they should know where to buy. (Hear hear.) It was the advertisers that had made the magazine possible and were ensuring its continuance. Let the members recall that fact every time they made a purchase. (Hear, hear.) On the other hand, the Institute felt now that in the magazine they were definitely giving their advertisers something tangible in return.

Mr. J. J. Marsland (VK3NY) supported the toast, and referred particularly to the great success of the recent DX contest, and the fine part played by Messrs. Philips Lamps, Siemens (Aust.) Pty. Ltd., and Amalgamated Wireless Valve Co. (Applause.)

The toast was honored with enthusiasm, and was suitably acknowledged by Messrs. Dyer (Philips), Purcell (Siemens), and Sharpe (A.W. Valves). Mr. Alan Duke also returned thanks, and assured the Institute of all the support possible.

A vote of thanks to the Chairman proposed by Mr. Gronow, and the response, concluded a particularly fine get-together, which will undoubtedly be repeated annually.

Don't keep the stamps from a report. If you fail to QSL, it isn't honest.



Ivan Morgan attempts to Fish out some 5 metre waves from a wayside pool.

VISIT TO BALLAN.

On Sunday, the 4th November, as a grand finale to our Centenary Convention, the gang, including wives and girl friends, had a wonderful time at the Beam Station at Ballan by courtesy of A.W.A. through Mr. Appely. About 75 members and friends attended, and after viewing the powerhouse and transmitter assembly, not forgetting the antenna array, were most hospitably entertained at afternoon tea by the wives of the staff.

The afternoon saw a most serious struggle for supremacy on the cricket field between two sides of 15 or so. A fine show was put up by 3HW and 3WG, including others who lost their wickets at the first ball. However every one enjoyed themselves.

Geo. Manning, our "Eric Welch," was broadcasting the cricket on Ivor Morgan's 5-metre field set only to find that Len. Moncur had pulled the mike plug out of circuit.

Vaughan Marshall held the raffle of the day for various valuable prizes, of which, strange to say, Harry Kinnear picked out his own ticket. (Suspicious were aroused, but nothing could be proved.)

The presentation to Miss M. Hutchings, 3HQ, of the cup due for the 5-point relay won some time ago, was made at afternoon tea, by the President, H. Kinnear, 3KN, and Miss A. Marshall, 3YL, also received her cup won at our last exhibition by proxy.

The party broke up after tea time, and everyone voted it the best picnic ever held by the W.I.A. (Vic Div.).



Above: Group of W.I.A. Members with Friends
Below: Country and Interstate Visitors with Managerial Staff of Beam Station

"WILL EVERY LOCAL CAR-OWNER DRIVE WITH ALL SPEED TO THE ALBURY RACECOURSE?"

Such was the history-making suggestion broadcast from QCo by Arthur Newnham. Undoubtedly it meant the saving of the lives of the Dutch airmen and their passengers in the K.L.M. liner during the Centenary air race. Arthur Newnham is an ex-British army pilot, so promptly recognised the difficulties under which the airmen were suffering in their frantic attempts to effect a safe landing in the Albury-Beechworth districts. In his broadcast speech the operator of the air liner stated that it was only the line of car headlights concentrated, that told them a concerted effort was being made to show them a safe landing. This constitutes a lesson to Australia, which is lagging far behind in methods of communication with aircraft. Once again radio has bridged the gap.

Arthur Newnham was originally an employe of Veall's, in Swanston St., where he was in charge of the radio department, in addition to conducting that firm's daily radio broadcast.

Quartz Crystals

Accurately cut and ground from the finest quartz.

Guaranteed to be cut properly with regard to the Optic axis.

200 Mx, 160 Mx, 80 Mx, £1.
40 Mx, £1/10/-.

Every Crystal guaranteed to give maximum output.

Blanks for any band, unground, but guaranteed to be perfect oscillators, 7/-. Special quote for quantities Oscillating Blanks, 10/-.

Obtainable from

P. R. WATSON
(VK3PY), Box 49, Warracknabeal,
Victoria.

Operating and Experimental Section

Conducted by VK3WY.

..DX Conditions.—During the last month, we have had the contest in full swing, and during the week-ends the bands, particularly the 7 MC band, have been just a horrible mush of QRM. General conditions have been more or less as follows:—

14 MC: This band has not been too bright, and a few European contacts round about midnight seem to be the best DX that could be managed.

7 MC: During the early morning, plenty of DX could be heard on this band, but seemed to be more difficult to raise than is usual at this time. Of the Europeans heard, D4BAR was easily the most consistent here. Two other stations which have been very consistent on this band are CT2BK and VQ4CRL. The latter averaged a good r6 and often reached r8. The band was often alive with VK's, answering his calls, and a fair number seemed to raise him. Judging by the stations heard calling them, VK3GQ, VK3KX, and VK3EG must have done very well on this band. Here's hoping for your logs next month om. During the evenings there has not seemed to be the usual number of W's on this band, but on several occasions between 22.00 and 24.00 they have reached remarkable strength. About this time, also, PK, AC, and J stations have been coming through remarkably well, but were rather difficult to raise from the Southern States. VK4 and VK2 seemed to get most of their calls.

Procedure—Good and Otherwise.

Letters and articles about incorrect procedure are very familiar sights in all magazines connected in any way with amateur radio. Of course, there is no doubt that they are needed. One only has to listen around the bands for a short while to realise that.

Operating faults are so varied and so numerous that it is impossible to attempt to cover them all, but here are a couple which may be noticed

very frequently indeed. The first is the often heard, and more often cursed, long CQ before signing. Up to six or seven CQ's is perhaps excusable, but when it reaches anything from 20 to 60 CQ's, it's enough to make any decent ham tear his hair. The thing that beats me is to find the reason for these lengthy efforts. If you listen to any of our best DX men, you will realise that lengthy CQ-ing is not necessary for that purpose, and it certainly does not improve the frame of mind of any ham waiting to call you. What, then, is its advantage over the more correct call? If any ham has a real reason for it, I would honestly be glad to hear of it!

Having got that off my chest, let's get on to the next evil. This is the incorrect use of SK. If properly used, this signal can be mighty useful, and eliminate a lot of needless calling, but the majority of hams nowadays seem to think of it merely as a sign that the QSO is at an end, and entirely disregard the possibility of it being the beginning of another contact. When you sign SK, tune round the band, and see if anyone is trying to raise you, on the strength of your having signed SK. For the luva Mike don't sign SK, and then immediately follow it up with a CQ call. That's branding yourself as an A1 "lid," my son!

For publication in this section, we would welcome any short articles or paragraphs, or any suggestions for articles on any phase of amateur operating.

We are hoping, in the near future, to start a section similar to the familiar Experimenters' page in "Q.S.T." This should be just the thing for chaps having some idea or gadget which might interest other hams, but which is not important enough to warrant a full article. Please let's have them, OM. It is one way in which you can do your bit to help the Mag. along.

Federal Headquarters Notes

By G. B. RAGLESS, Federal P.O.

We have pleasure in informing all amateurs that our recent protest to the P.M.G.'s Department regarding the unlawful operation of an Australian Commercial station on the 7mc band has been rectified, and the station has now moved its frequency.

Some months ago when it became known that the BCL license fee was to be reduced we requested the department to reduce the experimental license fee a like amount, but our request met with a refusal. It was thought that we had a good case when it is remembered that a portion of the experimental licence fee is directed to the national service.

Regarding high-power permits, we would like to remind all WIA members to obtain the support of their State Divisional Councils when making their claims. All requests should be sent to the Senior Radio Inspector of the State concerned, and recommendation by the WIA will have considerable influence.

WAC CERTIFICATES.

Applications were recently received from VK2ZH, VK2H2, VK3DX, VK4EI, all of whose cards were found to be in order, and they will receive the certificates direct from IARU. We would like to remind everyone that the cards must be sent to Federal Executive and not direct to IARU. If the cards are sent to IARU no certificate will be issued, incidentally, applicants must be financial with their State division of the WIA or ARA in the case of New South Wales.

WIA CERTIFICATES.

Membership Certificates of the Institute are now available, and Divisional Secretaries will be pleased to supply members at a small nominal cost. The certificates are of striking design and colour, and well worth having, so get in touch with your State Secretary.

NEW CONSTITUTION.

The solicitor member of the Federal Executive, Mr. R. D. Elliott, has been very busy with his private work, but expects to have the revised new constitution available in the near future. This new constitution aims at uniformity of the WIA in all States, and all Divisional Councils are asked to give it favourable attention.

11th ANNUAL CONVENTION.

Federal Executive have decided that the next Convention will be held in January, 26, 27, 28th, 1934, at a centre yet to be finalised. We expect to announce the meeting place next month, in the meanwhile all members of the Institute are asked to bring matters for the agenda under the notice of their Divisional Councils. As soon as particulars are finalised all States are asked to arrange about their delegate, and deal with all the other aspects of a convention.

THE THIRD FISK TROPHY CONTEST.

6-POINT RELAY, DECEMBER 8-23rd.

The time of the next contest in the Fisk Trophy Competition is fast approaching, and Federal Executive have pleasure in presenting the rules.

We have fallen in with the demands for a relay contest, and if the requests are any guide, the success of this contest is assured.

It will be remembered that all previous contests have been 5 pointers, but as this was obviously unfair to one State, this time we have a 6-pointer. The rules have been considerably altered, and this time there should not be any shortage of messages as in previous contests. There is no limit to the number of messages a competitor can originate as per rule 1. Every new station worked means a possible 6 fresh messages, and this can be repeated between the same stations on different bands. In past contests competitors have been too prone to remain on one band, but in this one a flexible station will count a lot if success is desired.

All State Divisional Councils are asked to provide prizes for their own members to create rivalry in their own State. If this internal State rivalry is aroused it will go a long way to help the State team to win the trophy. Queensland Division are the present holders, and are bound to fight hard.

The fun will be fast and furious, so get everything ready, and get into it and see if you can help your State to win the trophy.

RULES OF THE CONTEST.

1. Each station entering may originate messages starting with number one and following consecutively, there being no limit to the number originated, provided the following conditions are observed:—Not more than three originated messages to be sent to any one station on any one band. Messages must not contain less than 20 words or more than 25 words in their texts. The originating station must place the date on each message. All stations handling a message must retain the preamble and place their own call in it.

2. Messages can be originated in accordance with rule 1 by any station in any State. Each message must be relayed through no less than five States. By this we mean, and we want to make this point very clear, five States plus the originating State. Thus when a message bears the call of six States it is finished with and cannot be relayed any more.

3. Scoring will be as follows:—Every originating station can count one point for each message originated. Taking a message from a station and re-transmitting it to another three points. Receiving a message, but not re-transmitting it, one point. Receiving a message by the sixth State, that is a dead message, two points.

4. A copy of every message handled must be forwarded to headquarters, and all messages must be arranged in four separate stacks in accordance with their point scoring capacity as per rule 3. A statement of messages handled and a summary of his score, calculated by each entrant, should be included.

5. Each message must have the date and time when received and re-transmitted clearly marked on it, also the band received on and sent on. These facts are, of course, not transmitted, but are for check purposes. We do not require any lengthy log as in previous contests.

6. Messages must not be of the rubber stamp variety. Try and make them informative and interesting.

7. The dates of the contest will be: Start 10 p.m., Eastern Australia time, on 15th December, and finish 10 p.m., Eastern Australia time, on December 23rd, 1934.

8. All messages, whether they have completed the chain or not, must be in the hands of the Federal Secretary, Box 284d, G.P.O., Adelaide, by January 7th, 1935. Any reports received after this date will be omitted. All envelopes and packages must be clearly marked "Fisk Contest."

9. Any competitor detected breaking any of these rules or the P.M.G.'s regulations may be disqualified. Any competitor hearing another breaking either of the restrictions is at liberty to notify Federal Executive, who can take any action which the changes seem to warrant.

10. The awards for the States in the Fisk Trophy Competition will be decided as follows: The scores of the 5 (five) leading competitors of each State will be totalled, and the highest score thus obtained will be the winning State. The other States will receive positions and points for the aggregate in accordance with the totals they make. Should any State have less than five entrants the scores of those presented will be totalled.

11. The decision of the Federal Executive on all matters will be final.

Sample of test message forwarded by VK5XX at conclusion of the contest:—

No. 80 from VK4XX via VK3XX, VK7XX, VK2XX, VK5XX, VK6XX, 20/12/34. All competitors should be fully conversant with the rules of this contest by reading them several times before the date of starting, sig VK4XX.

(Received on 21/12/34, at 21.10 p.m. est on 3.5 mc.)

(Sent on 22/12/34 at 23.00 p.m. est on 7 mc.)

VICTORIAN QSL BUREAU.

Cards are on hand at the above Bureau, 23 Landale Street, Box Hill, Victoria, for the following stations, and will be posted on receipt of a stamped envelope:—

3AT, AY, BX, CL, CM, CW, DQ, DY, ES, ET, EW, FG, GX, GY, HT, IT, JZ, JR, JK, JN, JX, JG, KC, KM, KQ, LG, LP, LT, NG, NR, NW, OP, OY, OZ, PW, PZ, QZ, RQ, RT, RW, TY, UW, VU, WD, WC, WX, WZ, XK, XP, XQ, YR, YL, ZR, ZK, ZX. Messrs. Hecker, Simpson, Carey, Nihill, Bennett, Nye. Cards for FC, FM, GU, ZL being returned to senders if unclaimed within 14 days.

The President of the Réseau des Emetteurs Français (R.E.F.) requests that stations on the air at 11.00 G.M.T. (9 p.m. Australian Eastern Standard Time) will observe one minute silence, in remembrance of the Armistice. Phone stations are requested to refrain from modulating their carriers during this period.

R. E. JONES (VK3RJ),
QSL Manager.

TYPICAL TOPICALS. PERSONAL AND IMPERSONAL.

By "The Listener."

Mr. E. B. Foster, of Messrs. Noyes Bros., Melbourne, is on a business visit to Great Britain. While there he will visit the establishments of Messrs. Crompton Parkinson Ltd., of Chelmsford, and of Ferranti Ltd., of Hollinwood. Mr. L. C. Scarborough is on duty at the busy Lonsdale Street rooms during Mr. Foster's absence, and he will be assisted by Mr. W. G. Moffat, whose speciality is the electrical engineering department.

No less than five ex-commercial operators are at present engaged on the staff of Messrs. A. J. Veall's, Melbourne, and each is in charge of his own special department. They are:— J. E. Burgess, A. N. Ray, O. A. White, J. Carew, and S. G. Homberg.

One of the most interesting concerns in local radio circles is what is known as Australasian Engineering Equipment Co. Pty. Ltd., with which is associated Condenser's Pty. Ltd. The headquarters are at 415 Bourke Street, and the factory is in Latrobe Street. The factory has a fine modern plant and equipment, and the daily output of condensers averages 2,500. The sales manager at Bourke Street, Mr. W. Anderson, gave our representative the interesting information that during the last four years the output has represented one condenser a minute, Saturdays, Sundays, and holidays included. The whole of Australia is covered by the ramifications of the allied concerns.

Mr. K. Dyer is another of our busy radio personalities. He is in charge of the transmitting department of Philips Lamps for Victoria. As is popularly known, this great Holland concern, with Australian headquarters in Sydney, is world-famous for lamps, valves, neon and X-ray. Important new developments are pending, of which more anon.

An interesting device may be seen at Veall's Swanston Street store, by which a photo-electric cell operates a buzzer each time a consumer enters the store.

Have your call sign or W.I.A. put on the top of Sales dockets when purchasing goods.

Divisional Notes

**A.R.A.
(N.S.W.)**

President—F. M. GOYER, Esq.
Secretary—R. H. W. POWER, Esq.

Just about the time that this issue appears upon our bookstalls, the A.R.A. Week-end Camp should have been held. This is scheduled over the 9th, 10th, and 11th November, and, judging by the enthusiasm evidenced amongst both metropolitan and country members, a good roll-up is assured. The Executive of the A.R.A. feel sure that the event will prove to be the most outstanding function in the nature of a "Hamfest" for many moons. It should easily eclipse anything that has previously been done in N.S.W.

Immediately following upon this we have the A.R.A. Inter-Zone Relay Contest, which commences on Friday, 30th November; so the N.S.W. Hams will have a lively few weeks before them. Another matter for congratulation amongst the V.K.2's, is the manner in which the N.S.W. circulation is steadily increasing, and whilst at the moment it is thought that we have not yet reached the figures being obtained by V.K.3, still "We're on our way," and, provided the past consistent increase is maintained, it is felt sure that V.K.2 shall lead. (Good work.—Ed.)

By 2HZ PUBLICITY OFFICER.

The Zero Beat Radio Club was awarded the prize in connection with the Men's Hobbies Exhibition, and are to be congratulated on their success.

A 10-point Relay Contest has been arranged in N.S.W. to be run just prior to the Third Fisk Trophy Competition. A 210 is for the winner and a type 59 for the second. Full rules appear in this issue of "A.R."

The Centenary Contest up to this point has proved a great success in N.S.W., and we are hopeful that a "V.I.S. Banger" comes out on top. When the scores are received after the second week-end, if one N.S.W. Ham doesn't collect one will be very much inclined to eat the proverbial hat—to wit, VK2XU.

The general monthly meeting of the A.R.A. was held on the 19th October, some forty members attending, and VK2UX, the President, took the chair. Three new members were elected, the secretary mentioning at this stage the remarkable number of unfinancial members. Two visitors were present—Bob Fussell (VK2SS) and Mr. McMullen, who is unfortunately blind—the latter is a very ardent BCL listener and derives a great amount of pleasure from listening to the lectures. The rules of the 10-point Inter-Zone Relay Contest were announced, and some were severely criticised by various Hams, who pointed out that the Sydney Hams had little or no chance of winning. Rex Corthorn (VK2VG) generously donated an 80-metre crystal as a prize for competition amongst Sydney Hams only. Again the question of QRM during contests, especially on 'phone, was brought up. 2DA expressed regret that many amateurs spent hours tuning up their transmitters during contest hours.

Arrangements were finalised regarding the camp—catering, transport, etc., were discussed, —and from the tone of the meeting the week-end Hamfest at Kitchener Park, Mona Vale, will be well attended.

The feature of the evening was the lecture delivered by Jack Pinnell (VK2ZE) on "Wave Motion." Although the lecture was more or less on fundamentals, quite a number of facts and fancies were cleared up by the lecture, and everyone left with a much better idea of how his signals did penetrate to the ends of the earth.

TEN-POINT INTER-ZONE RELAY CONTEST.

INTRODUCTORY REMARKS.

The above contest has been organised to help create an inter-zone rivalry, and also to cement the many friendships that can be made over the air. For the contest the State of N.S.W. is divided into its normal eight A.R.A. Zones, plus the dividing of the County of Cumberland into two extra zones, namely, Zone 9 (north of Sydney Harbour and the Parramatta River); and, secondly, Zone 10 (south of that dividing line).

The contest is a message relaying one, similar to previous Australian five-point relays, and is open to all licensed amateurs in N.S.W. The winning station will receive a type 210 tube, while the second will receive a type 59.

You simply originate a message and relay it to another station in another zone, and if you receive one, you can relay it into another zone other than the one it has been through before. The message is relayed until it has passed to all zones, namely, 10, then it is considered "dead."

RULES.

(1) The maximum number of messages that can be originated by one station is 40, and they must be numbered 1 to 40.

(2) Each message must contain not less than 10 words in the text.

(3) Messages can be originated by any station in any zone, and may be relayed through any zone through which it has not previously passed, and when the preamble bears the call of a station in every zone, it is considered complete.

(4) Allocation of Points.—One point will be given for every message sent, and one for every message received, i.e., if a station relays a message it will receive two points. Originating and transmitting a message counts one point.

(5) All messages, whether they have completed the chain or not, must be forwarded in log to the A.R.A., also all originated messages, and be sent to the A.R.A. by 1st January, 1935.

(6) There is no rule against schedules in advance.

(7) A special log must be submitted by all participating stations at the close of the contest showing number of messages handled, together with a copy of the messages.

(8) The dates of the contest shall be from 2100 Sydney Mean Time Friday, 30th November, 1934, till 2100 S.M.T. Sunday, 2nd December, and again from 2100 S.M.T. Friday, 7th December, till 2100 S.M.T. Sunday, 9th December. Logs must be to hand at the A.R.A. by 1st January, 1935. Address your entries:—Association of Radio Amateurs (N.S.W.), Box 1734, J.J., G.P.O., Sydney, and mark the envelope, "Zone Contest."

INSTRUCTIONS.

(a) All message preambles must bear after the call, the number of the zone in which each station mentioned is situated, i.e., "HR NR 13 FM VK2HV Z2 via VK2XO Z3, VK2ZW Z4 and VK2QJ Z8, 9/12/34, Dx here has been good, etc."

(b) In all CQ calls the zone number must be mentioned when signing, i.e., "CQ, CQ, CQ, Z3, DE, VK2BP, Z5."

(c) As regards zone divisions, as no doubt arguments will crop up, each zone officer will have a copy of the counties in his zone. The zone officers are as follows:—

Zone 1.—VK2PE, Bourke. Zone 2.—VK2HV, Inverell. Zone 3.—VK2XO, Bellingen. Zone 4.—VK2ZW, Hamilton. Zone 5.—VK2BP, Hazelbrook. Zone 6.—VK2QA, Tullamore. Zone 7.—VK2FI, Gurrall. Zone 8.—VK2OJ, Albury.

The main towns in each zone are as follow:
Zone 1.—Broken Hill, Bourke, Willcannia, Cobar, Menindie.

Zone 2.—Walgett, Coonamble, Quirindi, Gunnedah, Boggabri, Narrabri, Inverell, Glen Innes, Tenterfield, Armidale.

Zone 3.—Kyogle, Casino, Grafton, Bellingen, Kempsey.

Zone 4.—Newcastle, Maitland, Singleton, Muswellbrook, Wyong, Gosford.

Zone 5.—Katoomba, Bathurst, Seone, Murirundi.

Zone 6.—Nyngran, Narromine, Dubbo, Wellington, Mudgee, Orange, Grenfell, Parkes, Condobolin, Wyalong, Hillston, Narrandera.

Zone 7.—Temora, Young, Crookwell, Goulburn, Canberra, Cooma, Tumut, Wagga, Junea, Gundagai, Yass, and Cootamundra.

Zone 8.—Albury, Corowa, Hay, Wentworth, Deniliquin, Jerilderie.

The above should give everyone some idea of the zone he is situated in; or if in doubt, get in touch with either a zone officer or VK2HZ. That's the test gang, and it is hoped everyone has a good time.

H. CALDECOTT, Traffic Manager.
W. MOORE, Publicity Officer.

Association of Radio Amateurs (N.S.W.).

"WESTERN SUBURBS WHISPERINGS."
ZO VK-2-MY.

With the Amateur bands already overcrowded and more Hams coming to light every month, one views with plenty of misgivings the influx of Semi-Commercials into the "Ham" bands.

Semi-Commercials appears to be the only way to describe them, as they appear to be in the strict sense amateurs, who are entitled to use a commercial or Governmental call and operate in the allotted amateur frequencies. VME, VHG, and numbers of mission stations, medical stations, etc., are but a few of those that are gradually invading our bands.

A glance at the Qsl card of "VHE," one of the invaders shows that the station (a naval experimental station) is allotted the frequencies 7000-7300 K/C and 6725 K/C for working depots in other States.

These stations are all Qro stations in comparison with the 25 Watts permitted to the average amateur all self-excited, and with notes on the average about T-3. If these are experimental stations, why not allot them an experimental call sign, and impose upon them the same restrictions as regards Qri, Qrg, and Qro in the amateur bands, as the humble ham has to comply with at present? Let them use the Commercial call signs by all means outside the amateur frequencies, but when they slide

into the amateur bands they should be compelled to abide by the conditions and restrictions under which the amateur has to work.

VK-2-FO.—Still busy rebuilding 40 M/x rig, but when heard the other night was R Max.

VK-2-FD.—Just finished rebuilding 4 stage Xtal rig on plate glass, including glass condenser. Looks a picture with a Dep 10 in the final.

VK-2-PT.—Experimenting with Doublet Antennas. Not very active at present, but works G-8 on 40 M/x in the early evening.

VK-2-UY.—Cheers Harry on Xtal at last and sure FB here, too, 4 stage rig with 211 in the Final Works European DX.

VK-2-OD.—Works more than his share European DX, but complains of Qrm from 2 XU, whose sigs R Max plus at Toms.

VK-2-XU.—Hot favourite for the Centenary Test in VK-2.

VK-2-PH.—Ray still heard on occasionally with RAC Xtal, gets out very well, and works his share of DX.

VK-2-VW.—Heard on good authority that Vic is contemplating staging a comeback to the ham game.

VK-2-PG.—Ronnie is on the warpath. Someone has been using his call sign.

VK-2-MY.—With the assistance of 2 FO and a friend, and under the instructions of 5 PK, launched a 40-ft. mast with a decided radiation angle. (According to 5 PK, gauged to land exactly in W R Max.) First five Qso-s were VS-6-AQ R7 and four japs R6 W-s ? ? ? ? Nil.

VK-2-BX.—Bert still mixes 10, 20, 40 and 80 M/x together, but gets quite a lot of DX on 20 or 40. 2 BX will be travelling portable very shortly up the north coast, and would like the gang to keep an ear open for him.

VK-2-MN.—One of the few hams that start off from the jump on FB Xtal rig. Works plenty of DX, and contemplates fone very shortly.

VK-2-NP.—Owes me a new pair of cans. His sigs R Max plus here from MOPA with 45 or 46 PA. Finds it easier to work W than ZL since changing to new rig.

VK-2-GR.—Another convert to the Tritet. Which perks FB TBO 410 in pa gives over an amp in the skywire, but Alec more interested in BCL band than DX.

Farewell.—VZ-5-FBX es VK-5-PK send 73-s to all the gang, and are looking forward to Qso-s with them on their return to VK-5. They reckon their stay wasn't long enough, and both admit the brightest moment in the tour was when Davos (2 FD) Starver was recognised and abducted by a hungry Mung last Sunday week (Hiii).

THIS MONTH'S FUNNY STORY.

VK-2-RY.—Ivan was sitting in to the family steak when a knock came on the door: Does 2 RY live here? Yep, that's me, answered Ivan. Well, OM, I'm a bit of an experimenter, too. Just been trying some B Class, and I blew up a 46. Only have one left, so would you mind lending me one of yours till I see if that blows up too.

VK-2-Ry.—Just returned from holidays big game hunting out west.

DX.—Anyone that feels like throwing out their chest after a tasty piece of DX should have a squiz at Con (2 LZ-s) log book. 28 G-s in an afternoon is enough to make the average ham turn the game up.

NORTH SHORE ZONE.

ZO—2DR.

Plenty of dope this month, so lets get going. The Cent. contest is in full swing, rigs which have been subjected to exhaustive tests and adjustments, and are doing their stuff at last. CQ test, DX, WAC, Whacko! ! QRM—Well, yes, another station or two can be heard! ! Well, chaps, our zone now consists of 94 hams, so I'd better get the personal items off my chest.

2AF is doing remarkably well in the test. Dave has 4 stge xtal and real 25 watts input with 410 final and new EC8 rx. 2AE is using a doublet antenna with Collins Coupler on 40, and a vertical matched impedance skywire on 20. Alan of 2AH is now in VK4. Expect we'll hear from him before long. 2BA must bemoan the fact that he's away at sea during the Cent. contest. 2HY is putting all available time into the test, and has worked 18 countries so far. Roy is using 59 tritet osc. 59 doubler, driving a 10 on 20 and 40 mx. Haven't heard from 2JU this month. 2JY is 'quiet once more; evidently the come-back wasn't a huge success. 2LD has moved to Lane Cove, and is still in North Shore Zone. 2NE is going in for quality fone on BC band, and is making a thorough job of it. Still another victory to the YLs. Ned, of 2HA, went over the top with 2VG assisting as best man.

Congrats., OM, and I hope you get on the air again shortly at your new Lane Cove home. Very sorry to hear that 2OE is closing down. Hope you can stage a comeback in the near future, Ron.

2QF is a new ham at Newport. Please let me have your news, OM. Rex, of 2VG, is building a.s. super. 2VG recently worked a couple of V8s within half an hour, and there are only about four hams there! ! 2VP has been heard on fone on 40 at nite. 2AG works plenty of Ws with 4 stge xtal, using up 46s in final. 2AG also has class B modulator with 46s. 2DA has 2 rigs, 3 stge xtal with 46s in pp and 852 s.e. Harry uses four type 82s in bridge ckt for rectifiers. 2DY is slowly getting things shipshape, and will have exciter unit perking within about six months (hi). 2JA has FB rig with 852 final, also has FB fone. 2LQ at Hornsby is very QRL. 2SS is using pp 46s in self excited, and is competing with Peter 2PV, who has pp 10s in S.E. for QSO with first yank (hi). 2UP's bug is fond of fast dots. 2VG and 2VQ are about 50 yards apart. QRM! ! 2AW is new ham, and heard with xtal note. 2HY, 2LZ, and 2HZ are having a country contest. 2HY is now 40, 2LZ 42, and 2HZ 40. First to work 50 countries gets the 30 bob prize money. (One for Ripley.) During a recent sked with 5FM we both had our masts blown down by gales! ! (hi). 2DA is going hot and strong in the test with raspberry QRI. Teh, Teh, Harry, DUD, of 2DU, recently acquired a car, and has given up radio in favour of the auto. He'll be back before long, I hope. 2EZ has joined the air force, so has gone off the air into it. However, Jack has 2 stge xtal rig, and is thinking of installing an 800. 2GJ has been on with vy nice T9. Gets out FB, also hrd trying vy nice fone. 2HG has been very quiet. 2HL has been missing altogether. 2HZ has been trying out new tubes in PA. First RV218 gave up ghost, and now uses fifty watter with terrible note, owing to spurious osc. 2KA is also in the test, but his antenna came down during first week-end, and he missed a lot of points. Paul is building 2-tube super with multi-element tubes. 2KJ has staged a comeback specially for the

test, and he seems to work plenty, too. 2LZ is going pretty close to winning this contest, as he's sure sticking at it hot and strong. Europeans simply roll back to him on both bands. 2UG is on occasionally, with fone and CW. 2VQ is always on the air. Works all kinds of things, and has had about 1500 QSOs in 4 or 5 months. 2YC still adheres to 10 mx. Here's a case of a "Good man always down never comes up." (hi.) 2WW is using s.e. rig, which has lately developed a terrible note. Electrolytic conked, OM? 2WW's is beautiful to copy. I am indebted to 2HY and 2AE for news supplied this month. If only chaps would rally round like 2XC, 2KM, 2HY, 2AE, 2DA, and a few others, the job of grinding out these notes would certainly be a blissful dream.

Now for a few notes from out Manly way, kindly supplied by 2KM. 2HF has visions of pulling the Centenary off. Just completed 12-tube a.s. super with xtal filter, and the xmitter is sure something to be proud of. T250 bottles in final! ! Three new hams in Manly now—2AX, 2BS, and 2QF—all having graduated from the ranks of the Manly Club. Andy (2AX) and Bill (2BS) contemplate QRO shortly. The club transmitter, 2MR, should be on the air any time now. (hi.) 2NG is still QRL with YLs and tennis. Putting out fb fone as usual. Gess u still hold title of fone merchant, Neil. 2DA advises that VP1AM and VP1AN are now VP3AM and VP3AN respectively. 2EL is back from ZL, and reports DX condx in ZL as marvellous. Eric is in Cent. Contest with pp 46s, but is getting the 852 ready with 3 type 83s in bridge as rectifiers. 2KM is QRL at present. Wants South Africa for WAC. 2WQ heard with vy fb fone. Gets fb BCL reports. That's the lot from Manly this month. Now let's whip across the harbour and see what 2XC has to report re Mosman doings.

2HI is off the air while building a super using a Philips AK1, an octode! However, he's having trouble with it; guess the electrons get all tied up between the six grids of the AK1! 2HI, 2PV, and 2SS indulge in loop fone QSOs late on Saturday nights, suppose that's their way of shaking off the YL after effects! 2PV is DC at last, and aren't the locals pleased! Rumour hath it that a bi-pass condenser did the trick. 2VQ spends quite a bit of time down in Mosman. He has a new rig, which seems to get over to Europeans in the late afternoon very fb. He has worked 18 countries in 3 weeks, which is quite good for 7 mc. 2FM still knocks holes in the ether with his pp tens, and uses an adding machine to reckon up the number of yanx to his credit. He has turned into a R. F. Surgeon, and uses the juice from his final tank to burn off corns, etc. It is rumoured that he is going to patent a method of R.F. shaving, and so dispense with the usual blow-lamp! 2XC has been playing around with antennas, and found that the correct position of the single wire feeder differed greatly from that given by the handbook, but was using a full wave antenna, which wasn't too high off the ground. 2XG and 2XR are still in retirement, and the idleness of such beautiful gear as those two posess is a constant source of sorrow to the local gang. Heard a new ham in Manly signing 2AX. I sure hope he maintains the FB record of ole Geoff.—ex 2AX. And so ends the Mosman notes. Thanks, vy Ian, OM.

MAROUBRA BAY GANG NOTES.

By 2XV.

Since the beginning of "Amateur Radio" the Maroubra Bay gang have been constantly

asked for news; but up till now they have preferred to be spoken of as the "Strong Silent Men of the South." Anyway, here goes as to their doings.

VK2WJ, John Reell (not the bloke with the hounds). This high-power merchant seems to be there at the critical moment when any DX is hanging about. OH, ON, YM, PA, YI, U, etc., being his bag on 14 mc. this month. 2XX and 2WJ are both 14 mc stalwarts, and never move; but 2XV (who oscillates between 14 mc and 7 mc.) joins them in a cheery fone talk practically any time of the day or night. These three stations all operate within a radius of 100 yards, and boy, oh boy, the QRM. 2XK (Jack Heavey)—nothing to do with the heavy side layer—uses a 3-stage xtal rig with 59-46—46, and seems to land the DX on 20 just as well as anybody with his semi QRP rig. 2XV uses a 4-stage rig and several watts on 46's in shove-grab in the final 2XV is contemplating high-power, and methinks a hush hush bottle is on the way. Jack O'Dea (2FQ), our other member, lives a little further away from the hornet's nest on top of the hill. He also joins in our 4 way fone QSO's on 14 mc.

2XU Gilbert tells us he will be moving to Maroubra to join the happy throng at the end of the month, and incidentally, Gilbert, you have picked the worst place in Maroubra, down there in the hollow of the tram loop. We are looking forward to see how you fare with the QRM.

14 M.C. seems to be brightening up a little after being as "dead as mutton" for about two months. Europeans and P.K.'s, V.S.'s, etc., are starting to filter through. 7m.c. seems to be O.K. from about 5 p.m. till 7 p.m., or 8 p.m. at night, and not so hot after that. W's are as usual predominant.

Incidentally, the boys round here are talking about forming a little club, as we have a few budding hams amongst us, so if anybody is interested, please get in touch with VK2XV, Phone FJ1581.

ZONE 2 NOTES. ZVO (VK2HV).

The outfit of 2XQ is poked away out near Spring Ridge with an FB RX, but no xmitter; nevertheless John finds time to hike over to Yarraman and have a yarn with some of the gang from 2HC on 80 MX.

Ray of 2HC has been on several times lately, but mostly on sked with Ivan of 3EG (late of 2EG, of Quirindi).

Ron, of 2RV, is still TNT, but expects to be on MOPA soon with 245's. Ron came into possession of an Xtal blank a while back so now fills in his spare time grinding same. Good luck, om. He sure was in his glee one nite when wking 2KR both on CW as stepping on the Bug.

Rons second op., Jack Musgrave, has been notified of his success in the last AOPC, and has been allotted VK2NF. Hearty congratulations are extended to Jack as welcome to Zone 2 om. (Jack, by the way, has just turned 16.)

Russ, of 2WT, has been too QRL to finish the new rig, but now shearing is over things should happen in the far north.

Recently 2MO and 2ZH of Gunnedah, motored over to Toddy of 2CR, where they were joined by 2HV and sec. op. Bill Picknell. Owing to the many discussions on Sniggle Sniggle Snoopers and 60 cycle ripples in 2CR's fb Xtal rig Bill almost forgot to sell all present "Amateur Radio."

Clem, of 2UR, Uralla, showed us some little bottles on the way home—not beer bottles either—T/250's, etc., as are they the berries.

Clem was under the impression that ham radio in VK was dead, but promises to pump a watt or two into the ant. before long. Old timers will remember Clem as old 2CH.

Eddie, of 2KN, finds time to come on 80 now and again, and has rebuilt his rig, the result being fb fone. Eddie is sure an fb hand with the willow as it looks like operating will be forsaken for competition matches this summer.

Jack, of 2CR, has not received his call yet, but he finds time to buzz over to West Tamworth a couple of nights a week as chin wag with the gang on 80. Look out for that QRN, Jack om.

Cess, of 2KR, is still QRP, the only alteration of late being the substitution of new toobs for the MOPA, the 201A's having given up the ghost. Cess is looking forward to the time when Gunnedah has 240 AC, and is buying up big on AC gear. QRO, Cess?

Mac, of 2ZH, is still going strong. His rig at present is a QRP two-stage job, using 201A as CO and TB04/10 as PA. Using Telefunken modn. and about 2½ watts input. FB reports are received using this rig.

It is rumoured in the North-West that Mac and Cess are out for an old reservoir, and if successful intend putting both rigs in, and after the DX. Mark of 2MO says, "No power at the Reservoir NDG for DX." Hi, Hi.

2ZP's YL has a 7MC RX as a result. Arthur has been on 7MC fone quite a lot of late. Hi. Arthur wishes to contradict reports that he holds the record of having turned over 17 cars, says there were only 16. Hi.

No dope to hand from Andy of 2NA as we are quite sure there will be no signs of activity till the new year.

2JF has been QRT for months now as it looks like he can't get out of the habit. Can't you liven him up, Eddie?

2HV has been bitten with the DX bug of late as gets some fb reports from W with his 8 watts. Harry started to answer a CQ from J2KN the other morn at 0430 as when he woke up at 0545 was still calling Hi.

Well, chaps, don't forget to send in those notes to 2HV before the 10th of each month as if you are not a subscriber to this mag. drop your subs. along right away. 73.

ZONE 6 NOTES. A.R.A. Zo—2QA.

Old Man Static has been making his presence felt very much the last month. Guess summer must be somewhere handy. There seem to be quite a considerable number of commercials operating on the 30 metre ham band, the chief offender being VRQ, who uses a rotten tone modulated note and occupies most of the band. According to the P.M.G. handbook no stations are allowed to use I.C.W., yet most of the commercials continue to do so. We would not mind lending them a piece of our bands if they would use a decent T9 signal.

VR2RJ and VK2WH live about 100 miles apart; both have had their tickets about 10 years. They had their first QSO with each other on 7/10/34. 2NM has a condenser mike in the course of construction. Harry expects great things from it. Hope it goes O.K., OM. 2LM still on fairly regularly has been wearing out a few 82's. Still using suppressor sniggle modulation. Wonders why anyone uses anything else. 2NS has been on occasionally. He has a new antenna. Half wave on 80 with quarter wave Zepp feeders. 2RS had a couple of visitors in the persons of 3OR and 3KR. Rob intends leaving for VK3 shortly. 2QA

Amateur Radio

still using 59's suppressor grid modulated hasn't made any alterations this month. Guess it must be good.

ZONE 1 NOTES. 20—A. WELLS.

Two new call signs have appeared in this zone recently, both located in Wagga. 2BW belongs to Alf Moyle, formerly known as "Cast Iron Joe of 2UO." Alf has a fine 3-stage xtal rig with tritet and suppressor grid modulation. The President of the Wagga Amateur Radio Club (Rev. M. H. Winkler) is the second newcomer, his call being VK2MP. We wish them both the best of luck. 2YW has been making a name for himself on both 20 and 234 metres. On 20 he has been having fb fone QSO's with W, and gets 25 letters a day reporting on B.C. transmissions. Doug. says the YL 2nd op. is a great asset when things get slack. It's marvellous how the boys rally round when there's a YL on the mike.

2TZ is QYL with a "Militia Blonde." What kind of an animal is that, Bert? 2RH also QYL. The same applies to 2JA. There is a likelihood of two more tickets in Wagga after the next exam., which will make a total of ten—what-oh, the QRM.

2TH is rebuilding again, this time a 3-stage xtal job with 47 CO par 45's buffer and 211 final. 2PN is clearing the decks for action again—even had the YL making curtains for the shack windows. Ross is interested in 10 metres, and has a new receiver and transmitter perking on that band.

2FI is QRL work these days, but shows up on 80 metres now and then.

2WB is as far from activity as ever.

Would like to have some dope from the rest of the gang for next month, so send it along, boys.

ZONE 2. 20—VK2OJ.

The first week-end of the contest is over, and QRM has ceased temporarily. Conditions for the first part were fairly good, but QRN played havoc here later on Sunday night, making the weaker stations Q2. 3MR seemed to have little trouble working Europeans in fine style. VQ4CRL was putting a great sig into VK, and was R7 here. Some of the more powerful stations were the loudest heard here for some time. 2YI is not taking the contest to heart, and says his receiver not up to test standard. Harry has 40 watts on a 210 in P.A., and is tickled with the results. Tone is a bit RAC, but good copy. Is very QRL of late, and he has not been able to keep the weekly R.A.A.F.W.R. skeds. At the moment it appears that conditions for the coming week-end may be spilt by QRN, but hope it clears.

Jack 2EZ passed through on his way to VIM, but his time was too short for a survey. Hope you can manage an hour or two on the way back, OM.

3EG says it's waste of time to sleep while a contest is running. Hi.

MALLEE AND THE NORTH. 20—SWE.

Activity on 3500KC has been very solid. 8WE has rolled up over 60 phone QS in all States (ex. that elusive 6) and ZL to date. Hook-ups up to 7-way and including up to 3 States, are getting common. The only way to do any good on 80 at present is to work a hook-up of several stations, even if you have several crystals. One of the QRO gang is bound to lob on top of you. The Mallee 'phone gang have changed their name, and call them-

selves the "Chain Gang"—no; none from Coburg—but such an area is covered with new "links" being added each Sunday that the title becomes rather apt. Most consistent in Sunday afternoon hook-ups are 3'sCE, WN, WE, EP, PW, ZK, and 2 RS. One of the most enjoyable QSOs of similar kind included 5MD, 7CK, 7XL, 3CH, 3WN, and 3WE; "Doc" and "Poley" were sure tickled to bits. 5LR, 6IV (Vers IV on the mike), 2HU, 5YA, and 5BR can be heard any nite. Anyone not knowing how to blow rectifiers apply to 2HU. 3ZL still got a terrific wallop up here, but can't hear anything of the remaining Ballarat gang. 3PY heard and worked two or three times, but suffers badly—low power supply and an over-plus of local QRM. 3KE still going strong. The Sunday morning gang—3NN, 3OR, 3KR, 3HL, and 8BQ—were a bit disorganised while Ken was away "feeding the fishes," but we heard a couple of good resolutions to get going earlier than ever on Sunday A.M.'s in future. The bulk of the Waggaites have been quiet, but 2YW (and Jess) heard a couple of times with very fb. quality both on speech and music. All work for the month here (ex. a bit of "enter-taining" (?) on 200) has been on 80—can't hear a thing on 40 or 20. 3LH and self giving xtal mike very exhaustive tryout, and have come to conclusion that they are as far ahead on condenser mike, and latter is ahead of a "hard-back."

WESTERN DISTRICT NOTES. 3HG-3OW.

Conditions in this district during the first two week-ends of the Centenary contest have been fairly good—the second session perhaps better than the first—so let us hope the last two will continue to improve. Here in Coleraine the only one of the gang doing much in the test is 3HG, 3JE having no suitable power supply as yet, and 3OW, 3PG not on much. 3HG has contacted 11 countries in 5 continents so far. 3PG did rather well the first week-end with very low power, but for some reason did not put in an appearance the second week-end. His input never exceeds four watts, and recent reports R6 from J and R7 from Europe! A new antenna has been erected at 3HG, and DX is much better, and a new receiver is contemplated. 3OW also has a new full wave antenna. 3GQ heard often in the test, and should show a good score. 3KX also very active. 3HL, getting lots of DX; believe he is in the handicap event, using two beam antennas. Of the others in this district, 3JQ and 3BW seem to be the only ones in the contest. 5LG is reported to be in this district, but nothing has been heard of him yet. 3OR and 3KR had a great week-end up at 2RS of Clare station, way up past Balranald. Rob is leaving Clare soon and moving near Albury. Nothing heard from 3JA, 3XI, 8GJ, 3NN, 3HQ, 3KJ, 3LB, 3GR, 3NK. 3NQ is reported to be active again.—78.

KEY SECTION NOTES. 20—VK3BJ.

The debate which was scheduled for the section's meeting on October 2nd, unfortunately had to be postponed until the next meeting on November 6th. Several complaints regarding interference caused by other hams—3RW and 3LG—using out-of-date signals were received.

Conditions during the Centenary contest seem to be better than they have been earlier, but static is pretty bad. Stations from all over the world are co-operating in the test, and during the week-ends, especially in the early evenings, the 40-metre band is absolutely full of all types of signals. It certainly shows that

single signal supers are required by competitors here so that they can do their best.

Some of the consistent overseas stations competing heard here are PAQDC, D4BAR, CTIED, V56BI, G2ZQ, VQ4CRL, PK8ST, SU1EC, V56AH, and many yanks and ZL's.

In Victoria 8KX, 3JQ, 3EG, and 3MR appear to be among the leaders.

3OC was unable to complete his new rig in time for the tests, but has since been heard putting out a very fine TG signal. The new rig is 59 tritet, TC04/10 buffer and 800 final using the latest ideas in split-stator condensers and aerial coupling systems. It is a work of art, and certainly is the neatest and best looking rig I have yet seen. The input to the final amplifier can be in the vicinity of 75 watts, which would sure make a noise.

Another ham with a new rig is 3WP, of Kew. 47 c.o., 46 f.d., and 210 p.a. are favored here, and in the few weeks since completion of the rig 9 countries in 5 continents have been worked.

3ZR (Yarraville) worked 3LX (Footscray) with only .0045 watts input to 2-E406's in push-pull. These super QRP fiends, hi!

3JO informs us that his brother, 70J, is likely to be back in VIM again soon.

It is with deep regret that we mention in these columns the passing of 3BC (ex 7BC). Bruce was not very active on the air since coming over here, but put in some good work in VK7.

A nice sig on 7MC comes from 3FB, who uses a 3-stage xtal rig 47co, 46 fd, p.p. 46 p.a. with input approx. 30 watts.

3DP may be transferred to VK6 soon.

3KC not very active; has only worked 2 yanks in two years, hi!

3PQ unable to take part in contest owing to being transferred to the mail branch of G.P.O. for Centenary. Very hard luck, om, especially when you went to so much trouble. too.

3Yo is trying out 20 metres again, but has not done much so far. Talking about 3Yo. How's this? I was working a station on 7Mc during the test, and 3Yo was on approximately the same frequency as 3BJ. With no "B" supply at all on my receiver I could still hear him heterodyning me, hi! 3CX is installing a buffer in his tritet, and hopes for DX. He obtained a xtal 7020kc from 3BQ, but when installed was on 7028kc. Where did extra 8kc come from? During two months 3VW has had 206 QSO's with hams in 10 countries. Uses input of 24 watts. He mentions that there is plenty of dx to be worked from 2-3 a.m. on 7Mc.

3Cs gets T9 repts from a 210 in a hartley on 7Mc. Ant. used is full wave Zepp hitched to a windmill tower. DX worked lately V8, PK. W es got R8 from V56BI during tests.

3DT lives 1/2 block from 3LN; built new xtal set recently, and listened to "Bang Horsby" from 3LN on 200 metres for first time in six months.

3WL was recently appointed an R.I.

A strange thing about VKZ is that, although he only gives you a report of QSA2 R2-3, and you are sending single, he can get the lot, hi!

As future notes will be sent in by 3PX, the new Secretary, I will say cheerio to all the gang, and please, boys, let 3PX have all the dope you can.—73.

VK3 'PHONE SECTION NOTES.

By J. R. KLING, VK3 JB.

The monthly meeting of the 'phone section was held at the Institute Rooms on Tuesday, 25th September, at 8.25 p.m., the meeting

opened by the Chairman (Mr. G. Thompson. VK3TH).

As usual, there was a large attendance of the "Gang," and a lot of business was handled, including the results of the 'Phone Competition.

The following members were present:—3XL, 3BY, 3SB, 3RI, 3BT, 3CB, 3OY, 3FY, 3BH, 3OV, 3YJ, 3LU, 3DH, 3ZO, 3KE, 3JB, 3GK, 3LM, 3LN, 3MK, 3HK, 3CR, 3PA, 3XJ. Allocations Committee.—Mr. Kerley, Mr. Lahiff, Mr. Manning.

The Allocations Committee had a hard job finalising the results of the competition, and finished up by giving their decision as compiled by the number of points allotted to the stations competing in the finals:—1st, 3BW, 117.32 pts.; 2nd, 3AM, 111.83 pts.; 3rd, 3DH, 109.27 pts.; 4th, 3BY, 109.25 pts.; 5th, 3LU, 105.5 pts.; 6th, 3PA, 103.62 pts.

Personal pars. from the 'Phone Gang:—3DH has been rebroadcasting some of the other "Hams" during his morning transmissions, and they came over OK too.

3LN is experimenting with speech amplifiers. 3JR has been putting over some good studio piano duets.

3XL has been intending to give a few talks in between his musical items.

3OY is announcing "Camberwell" again. How Cum Alan still shifting the gear around, hi!

3CB still keeps the afternoon session lively with "HOT" numbers.

3LU puts on a good programme Sunday at lunch time.

3AM does likewise, and has some very good Richard Crooks numbers.

3PA is still getting out well with his Class "B" outfit. Keep up the good stuff, Perc, old chap.

3JB intends to do some short-wave 'phone on the 80 metre band when he is not on the "Publicity" band.

3RI always has a good programme Sunday lunch time, too.

SHORT WAVE GROUP NOTES.

ZO—VK3XJ.

The Postmaster-General's Department spared no effort to make the tour of inspection of the Central Telegraph Office a success, when the group, together with members of other sections, paid a visit there on 26/9/1934, and all those who attended had a very interesting and enjoyable evening.

During the last week of September, Mr. Sones was in charge of the Australian Aerial Medical Services wireless exhibit at the Outback Australia Exhibition at the Melbourne Town Hall. Members of the group have given much valuable assistance to the success of the exhibit, especially Messrs. Sones and Rees, together with 3JO, 3WQ, 3XJ, 3ZJ, who were instrumental in the decoding of the messages.

At the meeting of 10/10/'34, a very interesting and educational paper on "Stability in Short Wave Receivers" was read by Mr. Quick, and discussion followed.

The Centenary Convention will have been concluded by the time these notes are published, and many good times enjoyed by those who attended.

VK4 NOTES.

Owing to the resignation of Mr. G. Harmer from the position of Assistant Secretary, VK4US was elected to the position. Mr. Kelly presented a report on the activities of the Technical Development Section. The 5 metre portable transmitter and modulation system

has been completed. Work on the multi-vibrator is progressing satisfactorily.

A picture benefit is being held at the Tivoli Theatre on 16th and 17th October for the purpose of raising funds for the purchase of a "cathode ray" tube and associate "trigger circuits."

All correspondence for the Institute should be addressed to the Secretary, Box 1524V., G.P.O., Brisbane.

JOTTINGS.

Conditions for the first week-end of the Centenary test were very bad, and DX was difficult to raise. 20MX was patchy for a short period round about 11 p.m. A few Europeans were just audible, but the mush came up quickly. On 40MX yanx were the best bets for the evening, and Africans in the mornings around 6 a.m. VQ4CRL and SU7EC being R7 here at times, and I think everyone raised them! By the number of stations calling them it looks as if 4BB, 4EI, 4GK will be well to the front.

4UU doing good work with the yanx scored approx. 220 points, and 4USf 289. 4RY worked that elusive African required for his WBE. Hi, Bill! But his luck in the Centenary test was bad, the nett result being W3, J2, J2, and he lost SU7EC.

4WT heard once or twice, but is very busy building "Bugs" and a QRO transformer.

4WD was handicapped by power QRM, so he threw it in.

4JF was working some Japs, but didn't stay on long. Guess QRM from that much criticised note of 4US was too hot!

4US was unlucky in losing a G2 who was blotted out by VK3 QRM. Charlie won't part from his RAC note even tho VK complaints are many. DX reports are good! His p.p. 46's put over 1.5 amps into his ant. Fb!

4UU still using his p.p. 210's with fb results.

4WA, a new ham at the Valley, uses 15 watts on a 47 in T.N.T., and a Collins network ant. Jack gets out fb, but is having trouble with power QRM.

4JP getting out fb with his p.p. TB04/10's. DX calls Jack, but he can't hear it!

4WB, 4GU, 4FB are three locals who are making pests of themselves by using fone on 40 mx during DX hours.

VK6 NOTES.

By VK6CP.

Owing to lack of finance, the proposed remodelling of 6WI was abandoned for the present, and it was generally agreed that the stn should be put on the air in its present form. The question of operators to get the gear on the air resulted in two of our most level-headed boys in RL and RX being given full powers to get things in order. At the time of writing the station has not yet been heard. 6SA has been asked to take charge of 10 mx and 5 mx work, and already has his plans made out.

It is understood that MN and CP have signified their intentions of doing things other than talking.

We again appeal to members to become financial. Remember it was the old WIA that assisted you to get that ticket, although some appear to have forgotten that fact.

The circulation of this mag. to xmitting members is about 30 copies, but only about 10 stns are ever heard.

6CP has undertaken to be the DX watcher to report to VK3 with reports of condx, etc. This matter will receive full attention in future issues.

When will DX conditions settle down is the query of those few hams who are operating. 40 mx at present is very patchy, with an occasional spot, when a KA or PK answers our frenzied calls. Fading between the hours of 7 and 10 p.m. local time is from R7 to R3. 80 mx is getting very noisy and the absence of ZL sigs is a forecast of this band's early demise.

Local signals on 40mx are weak, but during daylight hours country hams come in at good QSA.

6SA reports a couple of meagre QSO's with W's, and states one was a Lady OP. He is also very much taken up with the fine keying of the lady OP at VK6EM.

6KB now on xtal, and now hopes to QSO S. America.

6MN still raking in a few VK's, and on one recent Sunday eve kept this scribe waiting to click him with a QSP QTC for two hours. MN was QSO at VK6, and, if fading had not taken a hand, would have still been going strong.

By the way, 6SA has a new rig, and reports from observers say it is sure the goods.

6CX has now got things in very nice order, and his FBT9 sig is the berries.

VK6CX worked a YL and didn't know it—Miss May Mann at VK6EM. She certainly knows how to wield the brass.

VK6PK is building a new shack.

VK6WP, VK6SA, VK6BN, VK6MY are located within 400 yards of each other. VK6BN, VK6SA, and VK6MY are only about 100 yards apart.

VK6SA, after practising a few YL QSO's on VK6EM, worked W5DUR, the YL who wrote an article in the August "Q.S.T." Her OM is W5NW—"Soupy" Groves.

Heard in the Cent. tests: VK6FM, VK6SA, VK6MN.

Mr. Alan Watson, of South Perth, hopes to get his ticket at the next exam. He is a brother of Jack Watson, who held the call VK6JW a few years ago.

Heard now and then are—HD, DH, FH, CY, HW, and, to cap all, up comes 6HF again! Say, Hughie, we are sure pleased to hear you again, and don't forget the old WIA meetings.

'Tis rumoured that the old combine, 6LG and JS, are linking up again, while PK is busy chasing QRM from mains out of his receivers.

BN threatens to do some homework soon.

FO still pegging away.

BB will surprise on 10 and 5 mx, I hope, and LJ might do better with the key than the bat.

RX and RL have now an opportunity to show their sterling powers in getting 6WI going.

CP doing his best to make these notes interesting, and keeping in touch with country hams. Also threatens to come on with a 3-stager, finishing up with push-pull 46's. Doings of Country Hams—Spt. B.I.c. Hdg.

News comes from 6LK at Northam, per medium of a letter, that his station is on the air, using accumulator B supply and a 100 ft. vertical stick. Minor should get out. Nothing has been heard of him locally, and he also states that none of the locals are heard up at the home town.

LR, also of Northam, was heard on a recent Sunday with some decent fone on 40. Efforts to raise him proved futile, but LR seemed more concerned about grinding out canned music than QSO-ing anyone.

6FM and XL, both of Wiluna, are con-

assistent on 40 on Sundays, both coming in with plenty of punch. FM had the misfortune to blow a pair of 81's, and the last time I QSO'd him, he was using his 80's, the only difference being noticed was a bad chirp.

6KP, of Meekatharra, not heard, but have often heard stations calling him on 20 and 40.

GS and RS, of Harvey and Narambeen, not heard, while FL, Albany, comes to light at times, but, owing to condx, the signals are very patchy.

Another one known to be on the air is KC, of Katanning, but, as he is on QRP, have not heard him.

Great rejoicings at the shack of 6RW marked the work of his first ZL on fone on 80. The contact proved most interesting, as it evolved into a four-way contact with two VK3's taking part, all on fone. The locality of Wagin seems to be very suitable for Interstate and ZL working. Have heard RW working fone with VK2, and giving them R6, while it has been impossible to even hear the VK2 in the city. RW deserves all he gets, as, working off his own bat, with only a town supply of 220 D.C. to play with, he has adapted his gear to work very smoothly indeed. The latest is a 2-stage speech amplifier with town mains supply.

VK7 NOTES. Z.O.—VK7PA.

At the general meeting held on the 2nd of October, it was left to the Council to arrange for a delegate to attend the Convention in V.I.M., in conjunction with the Centenary celebrations, and at the meeting of the Council it was decided to send the hon. sec., Mr. H. M. Moorhouse. The November meeting is to be held a week late, to enable our delegate to get back with the details of the Convention.

It was with much regret that we learned of the passing of VK3BC, ex. 7BC, a very fb chap, and a loss, not only to those he leaves, but also to hamdom, and all VK7's join in extending our deep felt sympathy to his bereaved relatives.

7RB has tendered his official resignation, which was received with regret, but, owing to his having found employment in V.I.M., this was imperative, and VK3 takes another "7" to its list.

7JH has been using his tritet xtal rig on low power with very good results, so look out when he gets his final amp. going! His latest effort has been in the use of twisted pair feeders on 40 mx, and says it is the goods.

The rig at 7PA is perking fairly well at last, and it is hoped to do a bit more H.F. work again.

I think I can safely say that 7JB is our most active member in the contest, and should pull off the VK7 section. He works DX all night, and sleeps mornings and early p.m., so is earning his score.

7BJ and 7KV are heard regularly on 40 mx.

The usual 200-metre work is still going on, and 7BJ is a new one to this section of the game, being the resistance coupling addict. 7JB has given up his 200-metre work during the contest, so the noon hour on Sunday is rather bare at the moment.

As soon as this month—October—is through, it is hoped to get going again on a field day or two, to which all will be looking forward. This matter will be finalised at the November meeting.

RSGB-BEFU NOTES.

Via G6HB, ZE4AI, VK2XU.

The activities of British amateurs during the summer months were, as usual, confined in the main to field days and conventionettes. Numerous successful outings were organised by the RSGB research and experimental sections interested in 56 mc problems, and a summary of results was given by the manager of the group, G2NH, at the first London section meeting on September 8.

The ninth annual convention broke all records for enthusiasm and attendance, over 200 members being present at the different meetings. More than 20 well-known British Empire and foreign amateurs were present, including ON4UU, ON4AN, ON4HM, 4PA, PAOASD, OGG, OUB, OFB, VQ4CRH, VN2FP, ZE1JH, ZL1FQ, VP7NB, and SU1MM.

During the convention, a statement was read by the president, Mr. Watts, G6UN, in which he outlined numerous improvements in regard to licence conditions. The chief improvements related to the British amateur bands. For five years, rather severe tolerances have been imposed at the edges of our bands. These have now been reduced to a 5 kc minimum at the end of all bands, except the high frequency end of our 3.5 mc band—3780 kc. Members are advised to set their nominal frequency 0.1 per cent. inside the new bands, in order to prevent their transmissions appearing outside the bands, as a result of xtal or tx variations.

The next important concern applies to those interested in television. For the first time, British amateurs are to be officially licensed to carry out television transmission tests, and the frequencies allotted are those between 30 and 32 mc. The present 28 to 30 mc band will be used as a sound channel.

The second edition of "A Guide to Amateur Radio" was published in time for sale on the Society's stand at the RMA exhibition, Olympia. The new guide contains useful information contributed by some dozen or more of the best known British amateurs.

The RSGB will be pleased to forward individual copies of this handbook to any address in the world, at a price of 8d. per copy. Bulk supplies for overseas will be sent at a price of 8/- per dozen, carriage paid.

The international 28 mc contest, organised by the RSGB, commences on October 1, and it is anticipated that a very large number of amateurs will compete. In connection with this contest, the council of the RSGB have decided to annul rule 6, which required a minimum strength of QSA3 to be given before points can be claimed.

The RSGB 14 mc low power telephony contest also commences on October 1, and continues to March 31 next. It is expected that many new records will be established during this event.

The membership of the society is now 2,200, and continues to increase at a steady rate. The overseas subscription to RSGB-BEFU amounts to only 12/6 per annum. Apply to VK2HC.

All district notes should be in the Magazine Secretary's hands on or before the 18th of the month.

DIAMOND PERTRIX BATTERIES.

A visit to the factory where Diamond-Pertrix dry batteries and cells are created—at 119 Hawke Street, West Melbourne—is something of a revelation. These famous batteries are almost too well-known to radio amateurs to justify any recommendation. Nevertheless, it was interesting for our representative to learn from the sales manager, Mr. C. F. Swift, that the battery is classed as A.1, O.K., and all the rest by the following big users: The Army, the Navy, the Airforce, the Railways, the Police, the Post Office, Broadcasting Stations, Talksies, the Inland Missions, and Australian Light-houses. To have these entries on one's ledger is rather momentous. The secret of the success of the Diamond-Pertrix is its consistent service, which, of course, is an essential factor to any operator. Mr. Swift mentioned some excellent unsolicited praise from certain Victorian amateurs, and attention is directed to the firm's notification in this issue. The ramifications of the firm cover the whole of Australia, and there is another extensive factory in Sydney.

Victorian amateurs would be welcome at the Hawke Street factory, where Mr. Swift has a lot to show, of which he is pardonably proud.

SIEMENS-ELLIOTT MINIATURE INSTRUMENTS.

The firm of Siemens Brothers & Co. Limited, Woolwich, England, in association with Messrs. Elliott Brothers (London) Limited, has produced a very complete range of Miniature Instruments particularly adapted to the requirements of the amateurs, and the radio industry in general. By the installation of large numbers of these instruments in Australian territory, it has been conclusively proved that they are unequalled from the points of view of accuracy and reliability.

Moving Coil, Moving Iron, Thermo Couple, and Metal Rectifier Instruments have been developed in all ranges to comply with the requirements of the radio world.

Particular importance is attached to the fact that each instrument is individually hand calibrated against a master standard, thus ensuring the highest degree of accuracy attainable in instruments of this description; for example, all Moving Coil Instruments in this series possess a guaranteed accuracy of within 1 per cent. of full scale value.

Miniature Instruments can be furnished with either bakelite or metal cases of the flush or surface mounting pattern with practically any size of dial, of which the well-known 2½ in. "MR" series is the most popular.

ALAN S. DUKE PTY. LTD.

Reader will be particularly interested in the above firms notification in this issue. The well-known Westinghouse Lines constitute the solution of most difficulties, and the firm will soon have available fresh stocks, and invite application for their interesting pamphlet.

CALL BOOK

Australian and New Zealand for 1934-35.

Contains Time Indicator, Conversion Chart, Australian and New Zealand B/C Stations, wave lengths, power, etc. U.S.A. Long Wave B/C Stations. All the Long and Short Wave B/C Stations of the World. Index to B/C Stations, by wave length or frequency. Prefixes—by Countries. International Prefixes. Technical Data. All Australian and New Zealand Amateurs.

2/—3d. Postage.

Q.S.T. for 1 Year A.R.R.L. Membership 18/-

"RADIO" U.S.A.

No "ham," student, or engineer can afford to be without this Magazine.

2/- monthly. 21/- yearly.
2d. postage.

Send for our Free Catalogue on
Radio, Sound Projection, Flying,
Television, Refrigeration.

McGILLS Agency

183-185 ELIZABETH ST.,
MELBOURNE, C.1

Cent. 8113.

(The G.P.O. is opposite)

R.A.A.F. Wireless Reserve Notes


VMB
Total No. of Messages 990
Average per Station 141.5


VMB 1
Total No. of Messages 441
Average per Station 147


2A2
Total No. of Messages 232

ROYAL AUSTRALIAN AIR FORCE WIRELESS RESERVE, FEDERAL NOTES.

Activity in nearly all States seems to have been at its peak during the past month. VMB and VMD staged a contest, which, although not very well supported, shows that there is still a fair amount of life in both districts. VMC, of course, is all het up over the forthcoming convention, which, with the Interstate and country visitors, should be the best ever. We shall have the pleasure of having 5ZI and 7ZI with us, as well as other Reservist visitors. With all these arrangements on hand, there has been little time for normal training, but convention traffic made good practice.

It is with regret that the resignation of 2ZI had to be accepted, owing to business reasons, as 2ZI is the only man to have put VMB on its feet and organise a very active district. In his stead we have to welcome 2Z3, ex. TB2, who will have taken over control by the time these notes are in print.

Many members have been enquiring into the Reserve's co-operation in the Centenary Air Race, and pointing out the wonderful opportunities of doing some real work. It has certainly been disappointing to have to sit back and listen to the "commercial stations" for the race progress, instead of being able to watch for ourselves. Perhaps the Reserve could have been of great value in the case of the Dutch machine which lost its way over Albury and nearly met with disaster. It is part of our job to understand ground signals and methods of conveying same to aircraft, and if we had been called up for service, a communication channel second to none could have been provided.

In August, 1933, a letter was sent to the Air Race authorities, suggesting that the Reserve might be incorporated in the communications system, even in some small manner, but, unfortunately for us, the letter was never answered. The Reserve has a good cause to feel hurt because of the Air Race Committee's actions, as never before has there been such a splendid opportunity for the Reserve to fulfil one of its main objects.

NOTES AND RESULTS ON VMB-VMD RELAY CONTEST.

2ZI.

The results of the recent VMB-VMD combined contest were not as good as expected. Out of the 20 members eligible for competition, only 10 submitted score claims. Eleven members from VMB and nine from VMD were eligible, and out of this number only six from VMB, and four from VMD entered.

A number of logs submitted did not comply with the rules, so necessitating additional checking. In nearly every one of these cases the score claimed was under the number of points to which they were entitled to. It is therefore suggested that, in future, members examine more carefully the rules governing similar contests. Another contravention noticed was that certain stations were operating outside the set time limits, again showing the tendency to overlook rules.

It is hoped that future Reserve contests will be better supported. This being the first in either VMB or VMD, we may more or less class it as an experiment. It certainly showed that general operating is not as high as it could be. In one or two isolated cases heard, the operational standard was very low, whilst in others it was found to be excellent. Another item is Reserve procedure. Some members appear to have forgotten that we have a "Signal Training Manual," containing specific signals for the elimination of a great deal of plain language and unseemly conglomerations of dots and dashes whilst checking over received messages. Reserve procedure may not be the easiest to learn, but I would particularly impress upon members the importance of correct procedure. When in contact with another station, and not certain of a procedure signal, do not put your communication into P/L. Look it up in your manual, even if you have to give the "wait" signal while you do it.

Conditions during the contest were far from good. Thunder storms were reported by four members, power interference from two, and, on the whole, signal strength was not as great as it could have been. Credit is due to the winner, whose power input did not at any time exceed five watts, and very good work was done by the runner-up, 2B2, who used approximately two and a half watts input.

FINAL SCORES.

2A2, 232; 2B2, 192; 2A4, 190; 4A4, 120; 2A5, 119; 2B5, 108; 4B1, 101; 2B3, 45; 4B3, 41; 4A5, 18. Non-competitive scores:—2Z1, 204; 4Z1, 83.

SECOND DISTRICT NOTES. OCTOBER, 1934.

Activity for October consisted chiefly of the test with members of VMB. The actual results of scores, etc., are not yet known, but it is anticipated that VMB have the totals all their own way.

The usual Sunday night broadcasts are now being conducted on 7317 kc's, instead of on 4155 kc's, on account of static, but reliable contact with all stations is practically impossible, on account of skip distance. In future, broadcasts will take place at 09.00 hours, Sundays, on 7317 kc's. Should this not provide desired contacts, each section may be appointed separate watches, to ensure reliable communication.

4A2 is off the air, and is requesting to be placed on the "shelf," or retired list, until ready for working again. 4A5 and 4A6 very keen on traffic. 4B1 unable to obtain suitable alternator, so has now got 350 volts of batteries on 245 valve. 4B3 has been unable contact with others, on account of recent change in frequency. 4B5 has shifted to Brisbane, but present address only temporary, and not on watches at present.

Traffic totals other than contest traffic:—4Z1, 16; 4A5, 4; 4A4, 2; 4A3, 5; 4A6, 1. Royal Australian Air Force Wireless Reserve.

During the past month, activity in general work has dropped off. The contest provided opportunity for excellent training, particularly in the use of "difficult communication" procedure, owing to the prevalence of heavy atmospherics throughout the duration of the contest.

Next month will see VMB back into its stride again, with practical training in the capable hands of 2Z3 (ex. 2B5), the new D.D.C., who will have charge of all W/T communications. It is hoped that during this month all members will have become fully conversant with Part I. of the Signal Training Manual, so that a start may be made on the advanced procedure contained in Part II.

One of VMB's most active men in 2B2, the runner-up in the recent contest, found he could not continue activity, and has reluctantly passed in his Reserve insignia. We are all very sorry to lose him, and his place will be hard to fill.

As these may be the last notes I will be writing as D/C for VMB, I wish to thank all those members who have stood by me since the inception of the Reserve in this State. I have made many new friends, and my one wish is that the Reserve will flourish in future months, more so than it has done during the year I have held office. 2Z1—VK 2BP.

R.A.A.F. RESERVE NOTES, 3rd DISTRICT.

3Z1—VK3UK.

For the first time since VMC came into existence, nearly five years ago, regular schedules have been suspended. Because of the fact that so many members wanted to enter for the Centenary DX Contest, no schedules have been held during October at all, in consequence there is a dearth of news for our allotted space this month.

Amongst the Reserve stations taking part in the contest, 3DI seems to be quite the most successful, judging from the number of stations heard calling him. 1AI had one very bright period, when he worked 10 countries in some 14 contacts. 3Z2 has quietly been nipping up countries, and his total will be a large one, despite the fact that he has not

been able to devote full time to the contest periods. Incidentally, his receiver is a revelation, and, even amongst its S.S. brethren, quite the most selective I have used. I heard it tune over two stations 1.25 kc apart, about R5 each, and there was a perceptible dead spot in between. 3Z1 has spent the month in a complete rebuild. The receiver and the CO and FD stages of the transmitter are finished, and the whole outfit should be ready for work by the end of the month. A great deal of sleep was lost during the Air Race, listening to the traffic through the R.A.F. stations from London to Singapore, and the R.A.A.F. stations at Darwin and Charleville. We stood by for four hours when Parmentier and Moll were lost, in case there was some way in which we could assist, but, as they worked throughout the night on 600 metres, there was little we could do except listen to a drama more thrilling than any talkie.

3C3 and 3C6 put over a grand bit of co-operative work with Army portable stations located in the Grampians. The mutual help given, of technical assistance on our part and traffic practice on theirs, as well as the enjoyment both parties had, indicates very definitely that this is only the first of many such co-operative stunts.

3CI paid a flying visit to Melbourne one Sunday this month, and, as he will be unable to get down for the convention, 3Z1 was able to detail all the matters for discussion at our meetings then, and get 3CI's ideas and comments.

VMC would like to congratulate VMB and VMD on the contest they have just staged, and hope its success far exceeded expectations.

5th DISTRICT NOTES FOR OCTOBER.

It is pleasing to note that Reserve members are improving their stations. 5A2 has a new transmitter constructed by 1A1, and is using a much greater power input than previously. He has a very reliable signal down here, but receives our signals only fairly, probably due to a fairly high-level background. 5A3 has now constructed a c.e. transmitter, but requires a crystal for 7317 kc. 5A1 has spent so much time in the Cent. DX contest that he can hardly remember how to sleep. 5Z1 has constructed a 5-metre transceiver, and intends to experiment with 5A1 on 'plane to ground working, at a later date. Should these tests prove unsuccessful, it is intended to try 80 metres, using E/c oscillators. Any advice on this matter from other members in other districts would be much appreciated by 5Z1.

SIXTH DISTRICT NOTES.

6Z1.

One would imagine, from the scarcity of news in these columns, that this district had gone into recess. Such is not the case, though, as Reserve signals have been disturbing the ether in VMF all along; but couldn't push 'em over to VMC to catch these columns all the same, hi!

Listening-in one night on the lower frequencies, the traffic handling by VMB audibly over here was a perfect treat to listen to. It was good, snappy operating. Wish a few of you would transfer to VMF. We are a small scattered gang, and training is difficult, to say the least, owing to unreliable contacting, caused by such things as local interference from trains and skip distances. However, we do our best. Two more prospective members in the metropolitan area have hove up in the horizon, which ought to liven up things a bit.

6A1 has got on the air permanently now, and keeps watch Sundays before commencing duties in "B" Class 6AM. Uses a SE rig, but it is as steady as a rock. When 6A5,

four miles away, can't get broadcasts, owing to local interference, 6A1 relays. 6A3 keeps watch Saturdays, and, as the lower frequencies are useful, 7317 kc has been adopted with success. Although sigs jump from R7 to R2 now and again, it is better than nothing. 6A5 is keen, and it gets one a long way. 6A3 has actually left fone alone, and hitting up hard on the brass-pounding. Keeps watch Sundays and Thursdays like clockwork. He resides close to one of the country landing grounds, and so a useful man in case of emergency.

6A4 may be joining the permanent forces. We would be sorry to see Dave leave us. Although he hasn't managed to get on the air up to time of writing these notes, he will be on by the time they are in print, as the xmtr has been completed.

6A2 and 6A6 will probably be transferred to the inactive list.

6ZT is out of town, but keeps watches OK. Got a new rig going, with 59 E.C. oscillator, and those of you who have such a rig will appreciate the fun changing frequencies until one gets used to it. 6Z1 still alive, and going to put the present rig into a nice frame, after Centenary Contest.

By VK2FX.

We're in a mighty fine old game, though some don't like it much. I get a thrill with every dial and every key I touch.

But it makes me sick to see some Hams so quick to grab their pen, And write about some poor Young Squirt, who caused some QRM.

Now all these blokes who growl and moan and write in such a way, Are Lids themselves. Now mark my words and you'll find out one day.

Remember that this QRM made our wireless game.

Without a lot of QRM a Ham would go insane.

It lets you know that other Hams are on the air as well.

Without these signals on the band, you'd kick your rig to hell!

So when you hear a Ham whose sig. is far from being good,

Don't grab your pen. Just stop and try to use your block of wood.

Give him help in place of all your cruel, unwanted jeers.

You'll have a friend until your name in "Silent Keys" appears.

"A HAM ABROAD."

Ex YK, 2NR is now working with STC in England, and glad to be able to settle down. By October he hopes to have his call and be in the Centenary contest—the only drawback being he is only half a mile from 2ZQ's 200 watts. His QRA is c/o Miss Scanlon, 48 St. John's Park, Blackheath, London S.E.3.

It is the PLAIN DUTY
of every member of W.I.A.
to support the advertisers in
these pages, and when doing
to MENTION "Amateur
Radio". Not much trouble
to YOU—but it means a lot!

HAMADS

3d. per line. Address correspondence to Advertising Manager, "Amateur Radio," 128 Whitehorse Road, Box Hill, E.11.

VACANCY. — Senior Wireless Operator, in outstanding Militia Signal Section, for Young Amateur Operator, some experience preferable. Chance promotion, excellent comradeship. Captain Dunt, 38 Baker Parade, Burwood.

WANTED.—Motor-Generator, input 6 to 15 volts, delivering anything from 10 to 50 watts, at between 200 to 1,000 volts—or Generator alone, in any of above ratings. Write VK3NR.

FOR SALE: 3-tube S.W. Rx. Fones. Sterling, 15/-; Trimm, 9/- 2VL, "Winston," Malton Road, Epping.

THE TRANSMITTING EQUIPMENT COMPANY,

75 WERE STREET, BRIGHTON,
S.5, VICTORIA.

Manufacturers of "TECO" Radio
Equipment.

We buy, sell, or exchange all "ham" Radio Gear.

If you have any Junk, send it down to us. We may be able to dispose of it for you, or exchange it for some article you want, or trade it in on some New Equipment. Why hang on to something you don't want when, perhaps, you can get something you do want?

Write us for anything at all, or any information you desire. We will be only too pleased to be at your service at any time.

FOR SALE: Four used 281 type Valves in good order, 10/- each, or best offer. One UX 874 Regulator, 5/-.

WANTED: Two P.M.G. or similar Microphones.

AUSTRALASIAN ENGINEERING EQUIPMENT CO.

PTY. LTD.,

"Evans House," 415 Bourke Street, Melbourne, C.1.

TRANSMITTING CONDENSERS

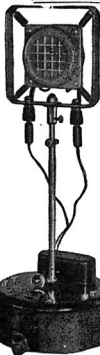
HIGH VOLTAGE

Paper Dielectric—Wax Filled T.C.C. CONDENSERS

T.C.C. High-Voltage Transmitting Condensers have been used practically exclusively by the "A" and "B" Class Broadcasting Stations throughout Australia, and also by all the leading Amateurs.



Type No.	Capacity.	Height.	Width.	Thickness.	Working Voltage D.C.	Price.
121	.00025	1½	1½	½	1500	12/1
121	.002	1½	1½	1	1500	17/11
101	1 mf.	5	2½	1	800	18/6
101	2 mf.	5	3	1½	800	24/6
121	1 mf.	6	3	1½	1500	24/6
121	2 mf.	6	6	1½	1500	37/-
141	1 mf.	6	6	2½	2500	76/6
141	2 mf.	6	6	4½	2500	136/-



High Tension Condensers for smoothing purposes, with working voltages up to 25,000 volts D.C., may also be obtained. Prices on application.

— THE —

Harlie

Single Carbon
Button Type.

MICROPHONE

List Price, £5/5/- Complete.

The Harlie Mike has approximately .25 volt output. It is self-contained, having matching Transformer and Bias Battery incorporated in base. Complete with On-Off Switch.

Height adjustable from 13 in. to 18½ in.

- - Fresh Testimony to
the "Staying Power" of

Diamond-Pertrix BATTERIES

V.K.3PG
CASTERTON

writes—

● "I have had really remarkable service from your products and think you may be interested in the performance of 4 of your 45V triple duty B. Batteries at my amateur radio station VK 3PG. These batteries were put into operation just one year ago and since that time have been the only source of plate power supply for my short wave transmitter and receiver. The station is in operation daily and the receiver runs for at least two hours a day. Hundreds of contacts with other amateurs in Australia and New Zealand have been made. 2-way communication has been established with 21 countries, including Belgium, Ecuador, Sweden, Canada, England, Germany, etc. The Diamond batteries have operated perfectly quietly during all this time and still supply a steady current."

*Put new heart into your transmitter and receiver
with DIAMONDS*

WIDDIS DIAMOND DRY CELLS PTY. LTD.

119 HAWKE STREET, WEST MELBOURNE, VICTORIA

And Dalgety Road, Miller's Point, Sydney, N.S.W.